"Happy New Year"

IN THIS our initial 1927 appearance, THE PAPER INDUSTRY wishes all its readers, advertisers and the entire industry, which it seeks to serve —A Happy New Year.

It is with no sigh of relief that we bid farewell to 1926. It was a good year; it was a happy year in that it gave us an abundance of work; a new view also, for it brought many new constructive trends of future business prominently into the foreground.

These business trends, like new shoots from the old vine, growing out into the New Year make the outlook for 1927 particularly alluring and intriguing. They are full of promise of better business and continued prosperous times.

Our salutation—"Happy New Year"—is an expressed hope; the hope that the coming events of 1927 will be even better than those of 1926; that we may all have life more abundantly; and that a great glow of radiant happiness will permeate the whole nation. We believe that our hope is based on facts which foreshadow this beneficient 1927 happiness.

Hope is a consequence of faith. Faith is the prerequisite of hope.

Faith is the bulwark of our American Commerce and of our glorious Paper Industry;—Faith in God; in our country; our government; our institutions; our neighbors and ourselves.

"Now faith is the substance of things hoped for, the evidence of things not seen." It is true that we cannot now reckon into the form of statistics the probable accomplishments of 1927, but our observation of the trends of 1926, enables us at this writing to visualize, through our faith, their approximate materialization.

This nation is alive. It is growing; almost two million souls were added to the population in 1926.

We have a total of over one hundred and seventeen millions of the best educated, most intelligent, richest, most resourceful and progressive people on earth—a people pulsating with power —restive of any restraint, brooking no obstruction to their progress toward a broader, higher, and more effective life—demanding and enjoying the highest living standards on the globe; requiring the constant expansion of a continued service, for the development of their maximum domestic, political, industrial and religious wants.

To attempt to satisfy one progressive, highly civilized modern American citizen, calls for a constant supply of better, newer, finer service.

To attempt to satisfy a nation of growing, supercivilized beings, such as make up the citizenry of these United States, calls for super-service activity from the entire nation.

The brand of service prior to 1926 is obsolete. The newer, finer type of modern service is demanded. The challenge of 1927 is to the nation and its producers to supply that service, and in those supplying processes lie the whole hope for the nation's happiness in 1927.

Like a modern Oliver Twist, the consumers of this greatest consuming nation of the world, stand forth asking for "MORE"—more of this newer, better, speedier service.

The former things have lost their pulling charms. "Give us new creations, new amusements, new styles, and new service in a new way."

And they are right!

They know—we all know—that we are living in an age of newer developments, the age of in-

C-H

Announcing!

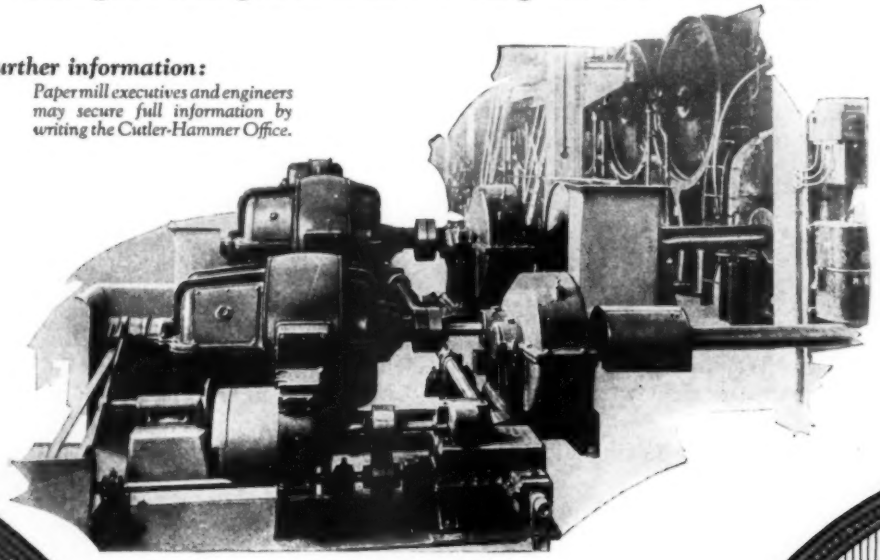
The Harland Sectional Inter-Lock Drive *Now* a Cutler-Hammer Product

By holding the running speeds of the various units of the paper machine to more exact ratios than ever before possible; the C-H Harland Sectional Inter-Lock Drive produces a more homogeneous paper of greater uniformity in thickness, quality and strength. Breakage is considerably reduced and greater running speeds may be employed on even the finest of papers.

• • •

This new Cutler-Hammer product comes to the American paper industry fully tried, and is a worthy addition to the line of electrical apparatus bearing the C-H trademark.

Further information:
Paper mill executives and engineers may secure full information by writing the Cutler-Hammer Office.



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Industrial Efficien... Depends ... Electrical Control

EDITORIAL

vention and power, the era in which we have the power to produce those things which we have the ability to imagine.

Don't worry about this insistent demand being supplied by any other nation. It won't be done. America must supply America's advanced service demand. What Americans want, they want now. The time element alone gives us the market.

1927 will be a New Year indeed; new industrial and commercial history will be written.

1927 will be happy—happy because every individual in this country must work hard, constantly and unceasingly in an attempt to satisfy this never-to-be-satisfied progressive constituency which will amply pay and richly reward an effort to supply modern service to this modern consuming colossus—The United States.

THE PAPER INDUSTRY sensing this insatiable demand for improvement and up-to-the-minute service accepts the challenge and pledges its influence toward making 1927 a Happy New Year.

Turning Over a New Leaf

WE INTENDED to start this editorial by saying we had turned over a new leaf, but this would not be correct, for we mean another leaf of the same kind. It is well at the beginning of each new year for us to take stock of ourselves and see just what we are striving to do and what we are thinking. The latter is really the most important, because what we think is mainly what we are. We do not feel, however, that it is necessary for us to turn over a new leaf—that is, a new kind of leaf—because this publication started out with a definite purpose along definite lines nearly eight years ago, and we have tried to keep every promise that we made in the first issue.

In looking back nearly eight years ago, we note that in the first editorial in that first issue, we stated "THE PAPER INDUSTRY will never contain a line of scandal, anything of a deleterious nature—in other words, loud talk. Its pages are not for the purpose of captious criticisms; its province is not to berate those in the trade who do not agree with us, or to publish the shortcomings of any one. It is published in the interests of the whole industry and for every one who has the best interests of the paper industry at heart."

Possibly we have fallen by the wayside on many occasions, but if so we have arisen and gone right at it again with the idea of making this publication not only the best one in this industry, but one of the best in America. We have before us a goal which it will never be possible to reach, because we are only human and as we travel toward this goal, it becomes bigger each issue, each year. We are spurred on in this effort by the continued support of most of the prominent firms in this country who want to do business with paper and pulp manufacturers, and by the kindly words of many of the paper and pulp manufacturers who commend us for the work we are doing.

We do most sincerely hope that the year 1927 will be the biggest and brightest year that has ever crossed the horizon of the American paper and pulp industry—and this is our promise, that everything that can be done, whether it takes time, effort or money, will be done by the publisher and the whole force of THE PAPER INDUSTRY to make the year 1927 stand out above all the years that have passed.

We wish it were so that every man in the industry could or would make an effort to be helpful to every other man in this industry. Humanity progresses slowly and while in some ways we may be far ahead of our forefathers of some thousands of years ago, it is still true that man is man's worst enemy, and it is still true that many men spend a large part of their time and energy in devising schemes for tearing down their fellow man or trying to injure his business. It is sad indeed, to think that some men believe they can build up a business by tearing down some other man's business, but this is not true.

The paper industry has made tremendous strides in the past few years in new developments and new types of equipment for plants. This has been particularly true in the paper machine itself. There have possibly been more improvements made in the Fourdrinier paper machine during the past few years than has been accomplished in fifty years before, and there are yet some other developments which have been already worked out but about which we can not say anything at the present time.

There has been much written and spoken on the subject of wastes in the industry and the saving of them, but there are still many, many places in the average paper or pulp mill where wastes can be eliminated, where power can be saved and where the final sheet can be turned out at a much less figure than is now the case. It is appalling to walk through some of the present paper mills and note where wastes are taking place, power unnecessarily being used, and other efforts being wasted which would make great saving. It is the problem of this publication to hunt out these

COCHECO

BELTING

What Does Your Belt Give You, Power Contact Or Power *Delivered?*

Do you know that paper manufacturers everywhere are coming to realize that good leather belting is, after all, the most satisfactory power transmission medium on nearly all paper mill drives. Leather belting transmits power with much less waste, less stretch, with greater freedom from breakdowns and for a much longer time than any other kind of belting known. Waterproof and steamproof leather belting has been developed to such a high state of efficiency that it performs as perfectly in wet places as ordinary oak belting in dry places.

Cocheco belting for the drives in dry places and Shedite, waterproof and steamproof leather belting, for wet drives make the ideal power transmission combination in the pulp and paper mills. We would like to discuss your power transmission problems with **you.** May we?

I. B. WILLIAMS & SONS

DOVER, NEW HAMPSHIRE

BOSTON, MASS., 111 Summer Street **NEW YORK, N. Y., 71-73 Murray Street**

CHICAGO, ILL., 1215 Washington Blvd.

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EDITORIAL

things and place them before the paper and pulp manufacturer, so that he may benefit thereby.

We want to repeat that THE PAPER INDUSTRY was started and has always been and will continue to be run for the one definite purpose of helping every man in the industry who has the best interests of the industry at heart.

Eucalyptus Pulp

NOT very long ago, in the July, 1926, issue of THE PAPER INDUSTRY, to be exact, mention was made of experimental work conducted at the Forest Products Laboratory, Madison, Wis., on the pulping of eucalyptus wood, for the account of some Brazilian interests, and in a letter received from Sao Paulo recently, it is stated that a paper mill company has been organized to operate a 50-ton mill for the manufacture of newsprint from eucalyptus. The people behind the enterprise are confident of producing an all-sulphite newsprint sheet at half the import cost of standard newsprint containing 70 to 80 percent of groundwood. To anyone who thinks of newsprint in the terms of the import definition the proposition sounds foolish, but there are a number of things that appear to make it perfectly feasible in Brazil. For one thing no newsprint paper is made in Brazil today. Of the twenty or more pulp and paper mills operated in that country, some make a little bleached stock from imported pulp, and certain grades of tissue are produced, but the chief output of the mills is coarse papers, paperboard and groundwood pulp.

The plantations of the company which is now constructing the mill referred to above, at Rio Claro, near Sao Paulo, has approximately 1,800 acres of land occupied by a stand of more than 10,000,000 eucalyptus trees, within a radius of thirty miles from the site of the mill. A remarkable thing about the soil and climate of the country is that trees sprout up from the stump when cut, the second growth being more rapid than the first. So says R. N. Miller, formerly of the Forest Products Laboratory at Madison, who adds that every tree five years old is five inches in diameter breast high.

Numerous attempts have been made in Brazil to utilize native plants and it is not the first time that an American engineer has gone there to assist in the starting of an industry, but the production of newsprint paper from a native wood is a novelty. If it is possible to make an all-sulphite sheet of newsprint with wood at the mill costing about $5 a ton of paper, the venture will be profitable, especially when it is considered that power is so cheap and plentiful that serious thought has been given to the use of electric boilers for steam generation. Pure soft water containing less than a 100 parts per 1,000,000 of total solids is found in abundance and with the exception of sulphur, dyestuffs and rosin the country is practically independent of outside imports. Pyrites can be mined but all sulphur will be imported, it being cheaper to take pure sulphur imported from the United States, Italy or Chile, than to roast pyrites for sulphur.

These reports from Brazil with regard to the use of eucalyptus as a pulpwood should be full of suggestion for American paper and pulp manufacturers, for it is understood that the Brazilian eucalyptus can be grown successfully in California, New Mexico, Arizona and Florida and so provide a new source of pulpwood which should assist in conserving the North American supply of spruce, even if American manufacturers may find it difficult to credit the statement that the trees will reach pulping size in four or five years, as has been averred.

With the development of neutral or alkaline sulphite processes of cooking, it would seem that a solution is in sight for the major problem now confronting the paper industry in countries where spruce is not available or where the natural supply is becoming exhausted. Both eucalyptus and the Parana pine of Brazil could be pulped economically by the neutral sulphite process if the cost of soda would not be prohibitive. As compared with the ordinary acid sulphite process, the monosulphite system gives not only a higher yield of pulp, but a remarkably strong fiber. It is doubtless the higher cost of chemicals and the failure to provide an efficient recovery system that are in the way of a more general adoption of the monosulphite system, though it is reported that Gösta Serlachius, the well-known Finnish engineer, who was entertained in New York last November, has been invited to introduce the system in France for the pulping of maritime pine, for which it appears to be well adapted.

One hundred and thirteen pulp and paper mills are now entered in the third annual no-accident contest for the grand prize loving cup offered by THE PAPER INDUSTRY. About fifty of these have not participated in the former contests. Twenty-three mills are in Group A; 34 are in Group B and 56 are in Group C. With a few days yet in which to register, the Contest already is a humdinger.

You analyze —now

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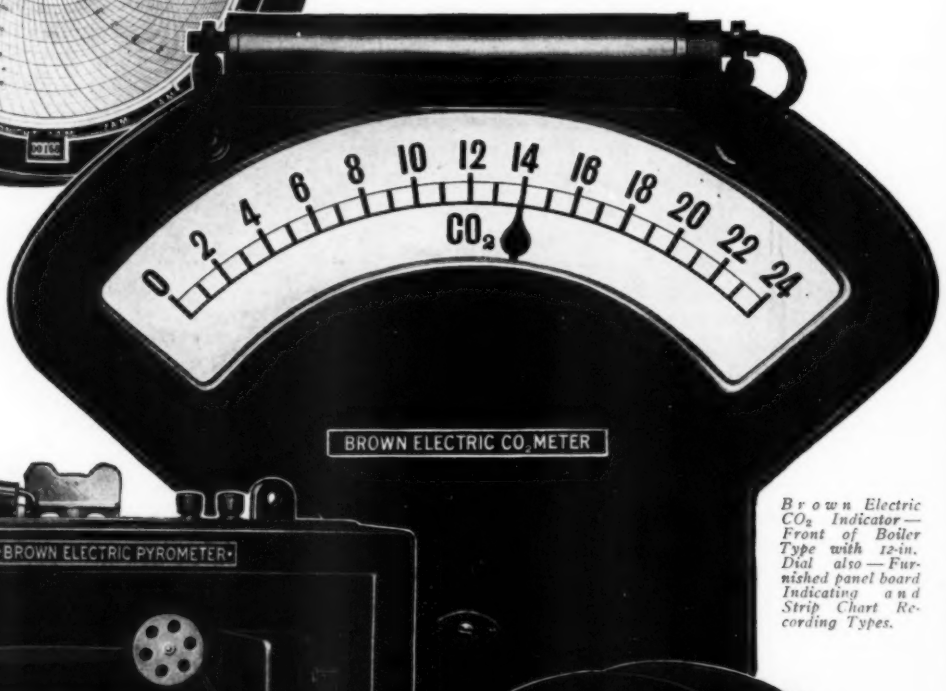
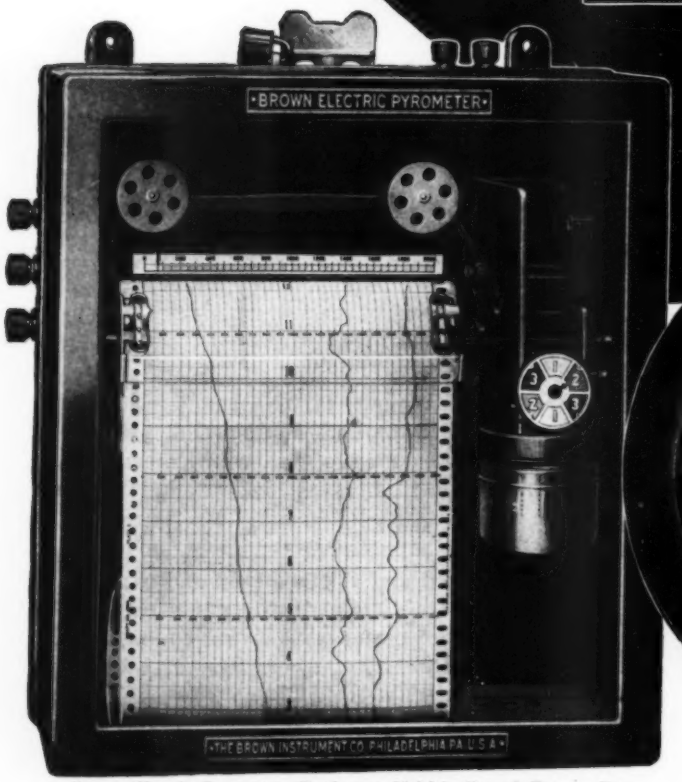


Brown Electric CO_2 Indicator—Front of Boiler Type with 12-in. Dial also—Furnished panel board Indicating and Strip Chart Recording Types.



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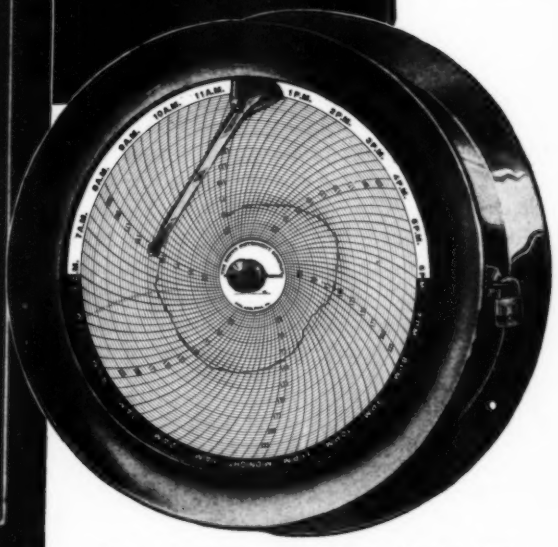


Brown Recording Pressure Gauges—Circular Chart Type. Also furnished in Indicating, Strip-chart Recording and Control Types.

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 8 JANUARY, 1927 No. 10

Five Years of Progress in Waste Elimination

By GEORGE D. BEARCE
Chairman of the Committee on Waste of the Tappi

CONSTRUCTIVE interest in the problems of preventable waste in the pulp and paper industry was greatly stimulated by the publication of that extensive report of the Committee on "The Elimination of Waste in Industry" of the Federated Engineering Societies in June, 1921. This Committee, which was headed by Mr. Herbert Hoover, made an exhaustive analysis of wastes that occur in several branches of industry and set forth the fundamental principles applicable to waste and its elimination.

The paper industry recognized the basic features of the waste reduction problem, and as a result of the interest stimulated in waste, a survey of existing conditions of the paper industry was started. An assay of conditions in the industry indicated that there were several outstanding sources of waste, and the investigation of a few concrete problems was considered advisable in order to establish the volume of such wastes and determine if a reasonable solution was possible.

These major physical wastes were:

1—Fiber losses in white water and effluent leaving the mill.

2—Losses due to the rejection or improper utilization of bark and wood refuse.

3—Loss of material in waste sulphite liquor that is thrown away.

All of these losses were generally found in the paper industry and it was obvious that they could be greatly reduced or eliminated. This was indicated by the fact that a few mills that had made a detailed study of their problems for many years had been able to greatly improve their existing conditions.

White Water Losses

A survey of the industry made in 1922 by the Committee on Waste indicated that not over 60 per cent of the mills in the industry were equipped with stock saving equipment of any kind. Moreover, the general attitude of many mill operators was that any recovered material would be of little value. The investigation further indicated that less than 10 per cent of the mills knew the volume of water being used per ton of paper, nor did they have any conception of the amount of fiber contained in their effluent. With a few outstanding exceptions, mills that were equipped with stock savers were unable to determine the operating efficiency of their saveall equipment, and the efficiency of the majority of stock savers in operation probably ranged between 30 and 50 per cent. In fact, the saveall was considered a piece of excess baggage by many mill operators and the loss of white water down the sewer a logical and necessary evil in a paper mill. Some mills would not consider that they were operating unless the river below the plant was well colored by the effluent leaving the paper machines and chemical plants.

Stock Requirements

It was considered necessary several years ago to use anywhere from 107 to 120 pounds of stock to manufacture 100 pounds of paper. For instance, a book mill that used 115 to 120 percent furnish was considered as operating under normal conditions. The normal figure in the manufacture of newsprint was 107 pounds of stock to make 100 pounds of paper. Some of the mills making a fiber sheet did not find it necessary to use quite as much stock, but a majority of the paper mills assumed that it was necessary to reject between 5 and 20 percent of the stock in the manufacture of their product.

Presentation of the White Water Problem

During the past four or five years, the various white water problems of the paper mills have been discussed from almost every conceivable angle by a majority of those interested in the manufacturing

processes, including the executives, managers, superintendents, engineers, chemists, and others. Moreover, it has been a live subject for discussion at the many meetings held by the Superintendents, Technical, and Cost Associations as well as other similar organizations in the paper industry. As a result of

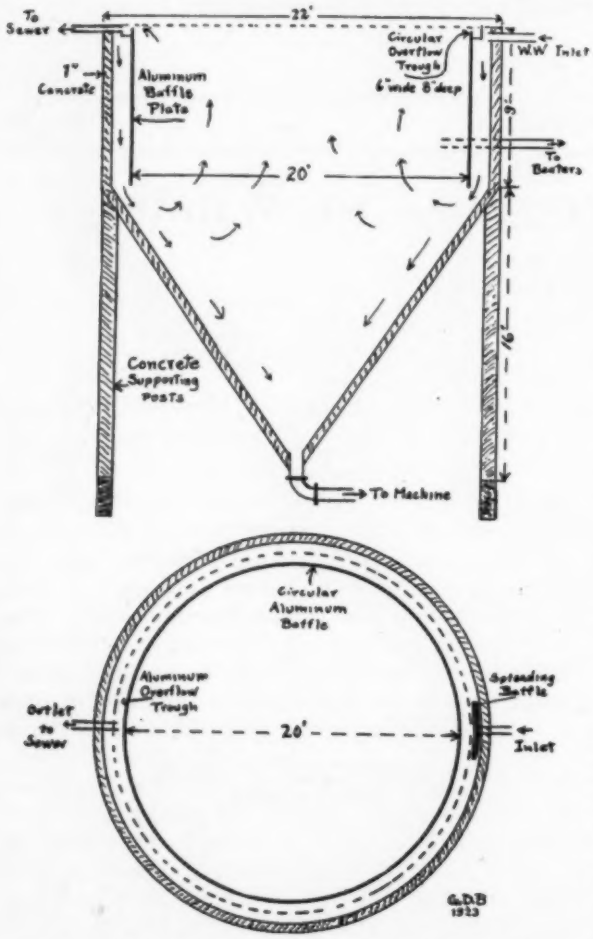


Fig. 1—Sedimentation tank (approximate dimensions)

this interest and activity in the waste problem, the industry is entering the year 1927 with an entirely new viewpoint regarding stock and fiber losses. It recognizes that these losses occur in almost every mill and it has been proved many times over that such wastes are largely preventable. Moreover, the material that it is possible to reclaim is considered a valuable asset in the manufacturing process and that the actual value of the reclaimed papermaking materials is reflected in the balance sheet of the operating companies.

Analyzing the White Water Problem

The operating and technical problems that have been discussed during the past few years have been complete and far-reaching. It is recognized that the **first step** for an individual mill to investigate is the volume of water that is used per ton of paper. The interest in regard to this phase of the problem was clearly brought out at a recent meeting of the Superintendents' Association when one of the members described the method of reusing white water at his plant. Claims were made that all of the stock carrying water from the paper machines could almost be measured in a ten-gallon pail, and this was successfully done by reusing white water on the paper machine by means of specially designed showers. The accepted volume of water required to make a ton of newsprint is approximately 15,000 gallons, but one mill that is required to purchase its fresh water by the gallon found that it could successfully operate with approximately 2,500 gallons of water per ton of paper. These are extreme examples, but indicate the trend of activity in regard to white water utilization on a paper machine.

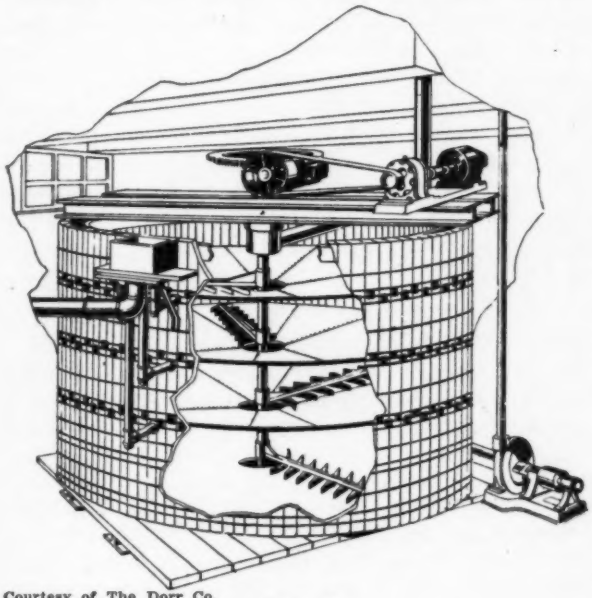
The **second phase** of stock saving is the selection of the type of saveall equipment fitting the conditions under which the plant is operating. It is generally accepted that a mill manufacturing a paper that contains a large amount of clay or filler should use the sedimentation type of saveall. The principle of this type of stock saver appears to be admirably suited to fit the conditions, because approximately half of the reclaimed material may be a mineral material that lends itself quickly to sedimentation. Moreover, in this process of settling, the mineral substance will carry down and settle the fibers in the white water.

Sedimentation Tanks

There are various types of the sedimentation system and perhaps the simplest one is that used by the Miami Paper Company and illustrated in Fig. 1. This particular installation is a concrete tank, though a sheet iron tank is also on the market. It is advisable to make such a saveall, and in fact, any stock-saving equipment, almost an integral part of a paper machine. In the conical saveall illustrated, the thickened stock drawn from the bottom may be returned to the paper machine chest or mixing box. The water drawn out by means of the pipe about halfway up the tank is used in the beaters, and any overflow will go to the sewer. Many tests have proved that the sedimentation tank will reclaim the papermaking materials so efficiently that there will be less than ¾ of 1 percent in the water rejected by the equipment.

Another type of stock saving equipment that is used to a large extent is the compartment sedimentation tank illustrated in Fig. 2. This has the added advantage of quick settling, proper removal of the concentrated papermaking materials, and moreover, the installation requires less space. The sedimentation system of reclaiming fiber must be installed only after a thorough investigation of the characteristics of the material to be reclaimed as well as the conditions under which it must operate. In one or two instances, the results were not satisfactory but

it was found that certain operating conditions were ignored, and as a result the sedimentation system did not have a fair chance. This system may be applied to white water having little or no filler, but on general principles the results cannot be fully satisfactory on effluent that contains no filler and the



Courtesy of The Dorr Co.

Figure 2

size of the sedimentation tank must be greatly increased to take care of such a condition. Several mills that use only about 4 or 5 percent clay in their paper are operating in a very satisfactory manner. But this seems to be the practical low limit for the sedimentation type of equipment.

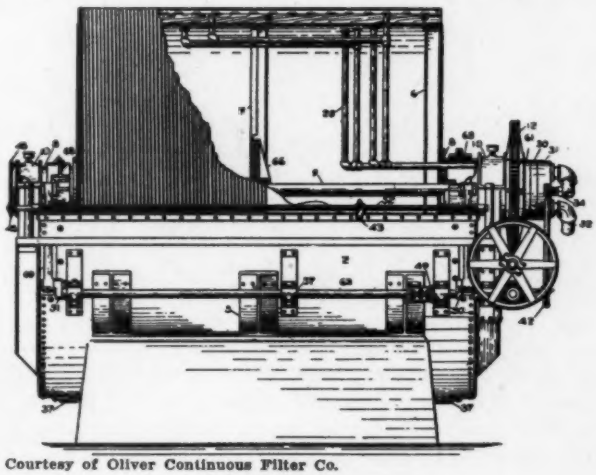
Vacuum Filters

The second and equally important type of stock saver is the socalled filter. This has a broad field but is perhaps best suited for effluent that contains little or no clay or filler. It is, however, being used in book mills with quite satisfactory results, but the principles do not lend themselves quite so readily to that type of stock saver as the sedimentation system. There are two types of filters, (1) the "cylindrical" and (2) the "disk." Fig. 3 illustrates the cylindrical type of filter that is being used very successfully in the industry. The basic principle of the filter is that a mat must first be formed on the wire of filtering medium. This mat then provides an effective and efficient filtering surface. It is estimated that thirty to fifty percent total losses in the filter occur during the period that this mat is being formed on the filter wire. After the mat is properly formed, little if any fiber or filler will go through it. The disk filter (Fig. 4) uses the same principle, that is, a vacuum is created, a mat drawn on to the filtering wire, and the stock is allowed to accumulate on this mat. Perhaps the principal differences between these two types of vacuum filters is that the disk filter does not require quite as much space to install and that the filter wire is more easily renewed. Of course there are many other mechanical differences between the two filters. Again, we find it advisable to install the vacuum filter as an integral part of a paper machine. This is especially true where mills make several grades of paper on the same machine and find it necessary to occasionally change color or furnish.

In addition to its suitability as a stock saver on the paper machines, the vacuum filter has been adopted with a fine degree of success as a deckering medium in the groundwood mill. It is so arranged that it acts as both a decker and a stock saver because all the excess white water from the paper machines may be diverted to the groundwood mill and thence to the deckering process. One recent isntallation of this particular type of filter reduced the stock loss in deckering groundwood from about 7 to 9 pounds to less than ¾ of 1 pound of groundwood stock per 1,000 gallons of water in the effluent.

Screen Savealls

The third class of stock saver includes the rotary screen saveall, either inward or outward flow, and the various types of angle screen wire savealls. The revolving screen saveall as well as the angle type of equipment have their own particular field. They are eminently suited to reclaim stock that has a long fiber and unless some method of producing a mat is employed they are practically useless on short fibered stock or white water that contains a large amount



Courtesy of Oliver Continuous Filter Co.

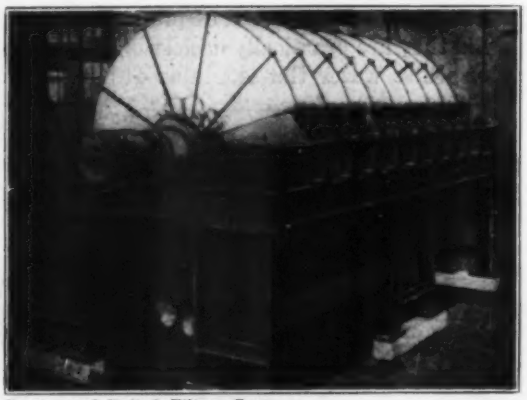
Figure 3

of mineral filler. Some mills have combined this revolving type of saveall together with the sedimentation tank in order to relieve a large amount of work for the settling tank. This adaptation is a special one, but used by a number of mills. The general principles of the revolving screen saveall are illustrated by Fig. 5, and one of its principal advantages

is that its original investment cost is reasonably small and that the upkeep is perhaps not as great as the more expensive sedimentation tanks and continuous filters. Where high efficiency of stock saving is not required, this type of saveall works out in a satisfactory manner.

An Estimate of Present-Day Results

Whereas several years ago stock losses ranging between 5 and 20 percent were accepted as necessary, at the present time the majority of the paper companies realize that it is possible by effective utilization of white water on the paper machines and the corrected installation of a stock saver to suit their particular needs, to reduce this loss to 2½ percent or less. A number of installations of the sedimentation tank system are currently operating at 90 or 95 percent efficiency and the fiber and filler leaving this equipment is only about ¾ of a pound per thousand gallons of water. Similar results have been recorded for the continuous filter type of stock saver, and a number of tests have indicated that the effluent leaving the machine carries only ¾ of a pound of stock per thousand gallons of water. The revolving screen type of saveall is not as efficient, but can probably be operated at 75 or 80 percent under ideal conditions. However, if this is not suited to the operating conditions, the efficiency might run much lower. It has been proved possible in groundwood papers, such



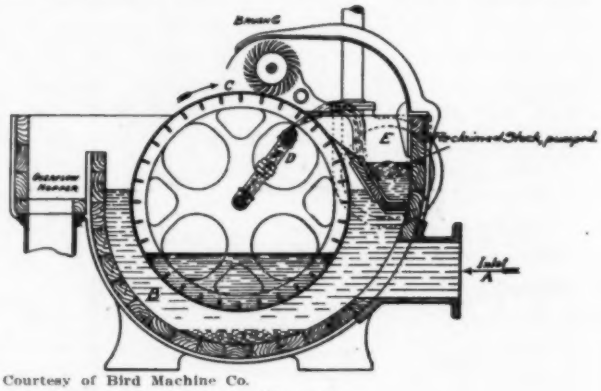
Courtesy of United Filters Corp.

Figure 4

as news, groundwood book, etc., to operate so that the stock losses are approximately 1½ to 2 percent. In the case of magazine and book papers where a large amount of filler is used, this stock loss has even been reduced to less than 1 percent. Most of the other grades of paper lie within this range.

If we assume that the net result of the campaign for reducing the stock and fiber losses of effluent leaving the mill has resulted in a saving of 5 to 8 percent, the figures build up amazingly. The production of paper in the United States averages approximately 6,000,000 tons a year, and a 5 percent saving in papermaking materials would be approximately 30,000 tons a year. At an assumed value of $30 a ton, this would be $900,000.

An estimate of one of the large companies installing filters in both the United States and Canada indicates that their equipment **alone** is expected to reclaim approximately 60,000 tons of papermaking materials. Using the above assumed value for recovered stock, the total saving would approximate two



Courtesy of Bird Machine Co.

Figure 5

million dollars per year. Without doubt, the total net saving to the paper industry in North America, due to the installation of adequate stock saving equipment, will amount to several million dollars per year.

Bark and Wood Refuse

Although the problem of correctly utilizing bark and wood refuse is not common to all paper mills, it is nevertheless a question of importance to pulp mills using a great deal of wood and in the aggregate represents a physical loss of considerable importance. When the inquiry upon this subject was started, it was found that very few mills considered that bark was anything but a nuisance. This was especially true where drum barkers were being used and pulpwood was being barked by the wet drum method. Such bark will leave the drums containing 75 or 80 percent water, and consequently its fuel value is practically nothing. There is, however, a large amount of potential fuel value in barking drum refuse as shown by the following tests made by the Forest Products Laboratory which were based on the average heating value of bark from dry stored wood.

HEATING VALUE OF BARK

B.t.u. per lb. (bone dry)

Spruce	9,500
Balsam	8,770
Jack pine	9,870
Hemlock	9,680
Aspen	8,460

The heat value available in drum barker refuse is obviously directly dependent upon the amount of moisture, and Fig. 6 is a curve that indicates the heating value of bark or wood refuse at different percentages of moisture. This total is based on the

assumption that the value of bone dry bark is 8,200 B.t.u. per pound of material and Dulong's formula was used to compute the figures. This theoretical curve, however, is very close to actual practice as several tests have been plotted.

The utilization of the refuse from barking drums is a two-sided problem. Some mills have developed a plan of barking the wood dry in one drum or one of two sections of a drum. This bark from the dry wood, usually between 50 and 60 percent moisture, is sent direct to the boiler house. Certain favorable conditions must exist, however, to use the "dry drum" method of barking, and a majority of mills find it necessary to use the "wet drum" method. Consequently it is necessary to dewater the bark coming from the drum.

Bark Presses

There are two distinct types of presses that have been developed in the industry during the last few years. The first group includes all the roller presses through which the bark is continuously fed. There are mechanical differences in the various roller presses. Some have two or three sets of rolls; one type uses upper heavy pressing rolls that are made up of sections or disks having approximately a 2-inch face, and still another bark press is a three-roll machine similar to sugar cane presses where one upper roll runs on two lower ones.

The amount of bark pressed out by the various roll type presses is dependent upon (1) the thickness and evenness of the mat of bark, (2) the pressure applied, and (3) the speed at which the press operates. The speed is probably the most important of all three because it is easy to operate a press so rapidly that no time is allowed for the actual removal of water from the bark. Tests have indicated that with all other conditions equal, the reduction in the speed of a roller press gives more satisfactory results.

The second type of bark press is constructed on an entirely different principle and one similar in action to the hydraulic presses used on pulp. In form, the "reciprocating plunger" type of bark press is similar to the hay or straw baler used extensively in agricultural sections. The bark comes down into a hopper and drops into the machine. When the plunger is on the long end of the stroke this bark is forced into the pressing section, and as this portion of the machine is about 3 feet long there is naturally a time element in the pressing operation that permits the water to be more thoroughly pressed out than in the roller type of press. Actual tests have indicated that it is possible to operate the plunger type of bark press and consistently deliver the pressed bark that contains between 50 and 55 percent moisture, whereas in the roller type of press it is difficult to deliver the bark at less than 60 percent moisture. Without question, the principles involved in the plunger type of bark press are superior to those of the roller presses.

Bark Dryer

One of the latest developments in the problem of bark reclamation is the adoption of the bark dryer. The principle upon which this is based is sound and further moisture in the bark is removed by means of waste heat in the stack gases. This dryer, which is illustrated in Fig. 7, is being installed in several mills and the results will undoubtedly conserve heat and

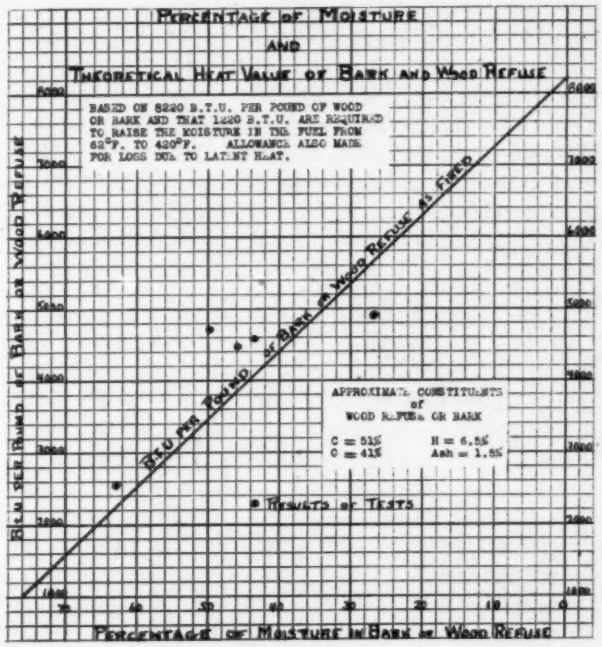

Percentage of Moisture
and
Theoretical Heat Value of Bark and Wood Refuse
Based on 8220 B.T.U. per pound of wood or bark and that 1240 B.T.U. are required to raise the moisture in the fuel from 60°F. to 420°F. Allowance also made for loss due to latent heat.
B.t.u. per Pound of Bark or Wood Refuse as Fired
Approximate constituents of wood refuse or bark
C = 51%
O = 41%
H = 6.5%
Ash = 1.5%
Results of Tests
Percentage of Moisture in Bark or Wood Refuse

Figure 6

prepare the bark in such a way that it will be a real fuel instead of a wet blanket on the fire. Doubtless, a combination of the bark press and bark dryer will work out in a most satisfactory manner.

The results of the inquiry started about four years ago relative to the use of barking drums and bark presses indicated that there were only six bark presses used in the entire industry. The interest in this particular problem of conditioning the bark for burning has shown great increases, and in the past few years several new bark presses have been designed and put on the market and a large number of both types of presses have been installed in the industry.

Bark Burning and Hog

Quite an extensive investigation was made by the Committee on Waste on the methods of burning bark and hog refuse. The popular design of furnace is the "Dutch Oven." The design of both the "Dutch Oven" and furnace has been in many cases improved and more careful attention has been paid to the proper distribution of material in the furnace as well as draft and other combustion conditions. As an indication of the interest in the burning of barking drum

refuse, an example at one mill might be cited. The mill in question found it necessary to pile out considerable bark from their drums. This was allowed to drain off and become somewhat dry on the outside at least. In the boiler house a careful record was maintained of all the boilers and the efficiency of operation computed weekly or monthly. On the theory that bark was waste material, the boiler house was not charged with the heat value in the bark. It was found necessary to remove this bark, and reluctantly the superintendent of the boiler house put one team on the task of bringing this pile of bark to be burned over the stokers. They found that the efficiency of the boiler house was slightly increased and shortly afterwards several teams were added and as a result so much bark was used that the efficiency of the boiler house climbed up to 90 or 95 percent. Naturally, the boiler house operators and others interested in this problem were convinced that there was some heat value in bark in spite of the old-time theory that it put out the fire rather than helping it.

Volume of Savings

The actual results accomplished in the problem of more correct utilization of waste bark and wood refuse cannot be easily estimated. There are many factors that are involved and such savings are to a large degree intangible. In the report of the subcommittee on the utilization of waste bark, it was estimated that there were 456,000 tons (bone-dry weight) of bark naturally produced in pulp mills in U. S. Assuming that this could be burned at an average moisture content of 65 percent and at an efficiency of 50 percent, a saving of 157,000 tons of coal would be made. At a value of $6 a ton, this represents a saving of $942,000 per year. A reduction of the moisture content in the bark from 65 to 55 percent would naturally make a greater saving and would nearly equal a million and a half dollars a year. Without question, there has been during the past few years a saving of a substantial proportion of this estimate, as a consequence of the adoption of bark presses and more efficient burning of bark and wood refuse.

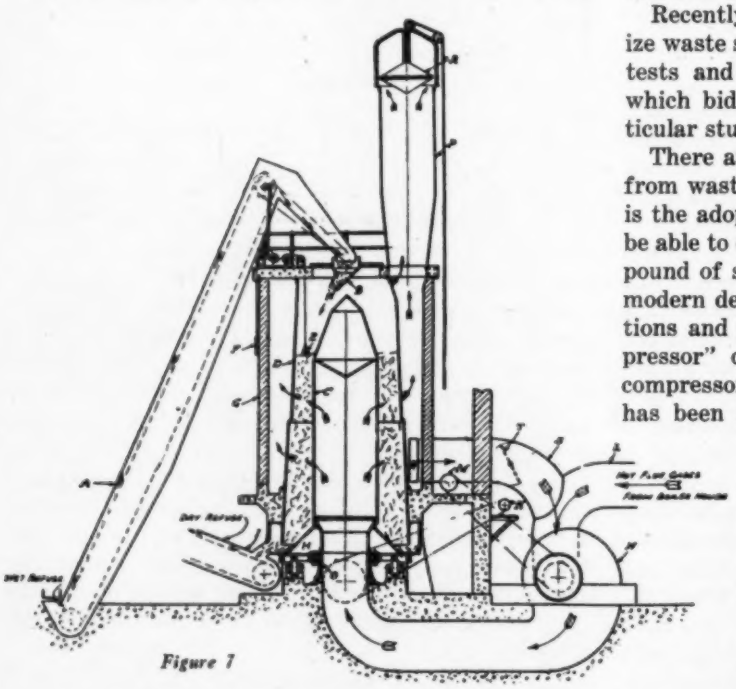


Figure 7

Waste Sulphite Liquor

One of the most difficult and the largest unsolved problem in the paper industry is the utilization of waste sulphite liquor. For several years, a number of sulphite mills have evaporated their liquor and it has been utilized in a concentrated form for road binder, core binder, adhesive in fuel brickets, and for similar purposes. However, the cost of evaporation is so high that the return for the by-products hardly pays for the operation of an evaporator plant. There has been a vast amount of interest in this problem and there are on record nearly 700 patents of different kinds dealing with waste liquor in many of its forms.

Recently there have been several attempts to utilize waste sulphite liquor, and, moreover, a number of tests and investigations are in progress, some of which bid fair to help in the solution of this particular study of waste in the industry.

There are two methods of removing the moisture from waste sulphite liquor, and the most logical one is the adoption of a high speed evaporator that will be able to evaporate six or seven pounds of water per pound of steam. This involves the use of the most modern designed evaporator, suited to fit the conditions and possibly the adoption of a "thermo compressor" operated by steam or a "rotary thermo compressor" operated by electric power. The latter has been successfully used in Europe and can be economically applied if the cost of electric power is sufficiently low.

Another method of waste liquor evaporation involves the use of stack gases. It may be possible efficiently to remove some moisture by this means, but there are very few modern steam plants that have enough heat in their waste stack gases to evaporate all the moisture from their waste sulphite liquor. This is a problem that can be easily figured out from the known heat units available in the flue gases and those required for evaporation. The use of stack gases in waste liquor evaporation doubtless has a limited field.

The best method of utilizing evaporated waste sulphite liquor at the present time appears to be as a fuel. This method of disposing of the concentrated waste sulphite liquor presents many interesting but

not insurmountable problems in regard to furnace designs, furnace temperatures, refractories, etc. Another suggestion that has been made is that the waste sulphite liquor should first be treated, and the industrial alcohol and other valuable by-products removed. However, this requires a large amount of equipment and considerable time. The resulting residue from such treatment of waste sulphite liquor could also be burned. The whole procedure is somewhat involved and it is doubtful if it will be attempted in the near future.

In one of the recent reports of the Committee on Waste an estimate was made regarding the feasibility of using waste sulphite liquor as a fuel, and it was estimated that if properly evaporated and burned there is enough heat value in waste sulphite liquor to pay for the installation of the necessary equipment in three or four years.

From an economic standpoint, the waste sulphite liquor is strictly a question of the cost of evaporating and utilization against the value of the material reclaimed, and the industry can doubtless depend upon the resourcefulness and the ability of its chemists, engineers and others associated with it to find a logical and satisfactory solution of the problem in the near future.

Miscellaneous Waste

In addition to the major phases of waste in the paper industry that have been treated in a satisfactory manner, there are many other waste reduction problems that have been considered by the industry.

In wood preparing much has been done in the reduction of barking and sawdust losses. Chipping methods have been improved and this indirectly benefits pulp yields.

The use of refiners of various types has conserved fiber in the mechanical process and the losses in white water have been much reduced. The adoption of pressure regulators and grinder controllers has led to economy in power consumption and the use of artificial pulp stones is a distinct advance in the art.

Sulphite mills have made progress in cooking methods resulting in steam and chemical reductions. Several have covered digesters with insulation and studies have been made in temperature of the digesters at different points.

The economies in soda and sulphite mills involve studies in the reduction of chemicals, reclamation of heat losses in the recovery processes, reduction of steam in cooking and the utilization of lime. Continuous causticizing systems and waste heat furnaces and boilers have also been adopted.

In the manufacture of rag pulp and also old paper stock much work has been done. Studies have been made regarding sorting and dusting losses, and handling equipment improvements have been made. A closer check is being kept of the shrinkage in washing and bleaching, and improved equipment has been adopted.

Some of the most striking economies have been made in the paper mill and many improvements are still to come. The utilization of white water on the paper machine wire, showers, etc., represents practical fiber recovery. The adoption of savealls of different types and the more economical use of fresh water has been more general. The application of the high slice, rotary screens, suction couch and press rolls has been a distinct advance in the art. The use of the felt washer and the elimination of the deckle strap both represent advances. Perhaps one of the most important economies has been the adoption of the effective paper machine hood, the heat economizer, and an adequate ventilation system. Closely allied to this is the design of the machine room and the use of the insulated roof. A closer study of paper drying and condensate evacuation systems has also contributed to large economies.

The steam plant has also produced its share of savings to the industry, and much has been done to increase the efficiency of burning coal. The installation of adequate metering equipment has greatly assisted in ascertaining the results obtained. Developments in the combustion field are progressing at a rapid rate, the paper industry closely following the results obtained in the central station field, and it will not be far behind in accomplishment.

One of the larger and more difficult problems is the handling of materials. The industry has made notable improvements in this field, which, although not spectacular, do represent an important saving in man power and cost. Modern conveyor systems have been installed for handling woodpulp, pulpwood, lime, sulphur, clay, old papers, coal, lime-rock, etc. Improvements in paper handling also represent economies and the quality is maintained at the same time. Probably materials handling is the most intangible of all problems in the paper and pulp mill, it being so difficult to measure the results of improved equipment in dollars.

Many other problems have been attacked and solved in the paper industry in the past few years, and in the aggregate, the savings, if possible to measure, would run into staggering figures. The end is not in sight because new and complex problems are continually presenting themselves, and there is still much work to be done, processes to perfect and many developments yet to be made in almost every branch of the paper industry.

Development of Stream Purification

No discussion in regard to waste in the paper industry would be complete without mentioning the problem of stream purification. The public as well as the paper industry is interested in eliminating wastes to the greatest extent possible, to the end that valuable material may not be thrown into

streams and rivers upon which mills are located and cause pollution. Many of the State Departments of Health and Sanitation or similar bodies have interested themselves in the problem of further purifying the streams of their respective States. Two of the outstanding figures in this work are W. L. Stevenson of the Sanitary Water Board of Pennsylvania and C. M. Baker of the Department of Health of the State of Wisconsin. These men and their organizations believe, and rightly so, that the industry is anxious to co-operate with governmental bodies and that the solution of the problem lies in co-operation with industry, instead of antagonism to industry.

The Sanitary Water Board of Pennsylvania and the paper industry in that State have created a pulp and paper waste disposal committee consisting of seven representatives of paper mills and the engineer of the board. Such an arrangement permits both the State and industry to present their side of the many complex problems involved and to procure a sound conception of the duties of each toward the public. A similar committee has been formed in Wisconsin and like projects are under consideration in other States. Thus the States recognize the principle of both conservation and wise control of streams and at the same time are just to industry without allowing the public interests to be abused.

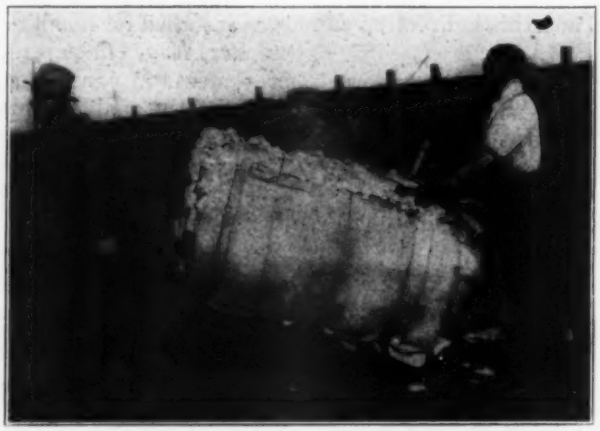
Already good results are being procured through this adoption of the friendly principle of co-operation. Active steps are being taken by almost every pulp and paper mill in the country to assist in settlement of the stream pollution problem. Without question, through such co-operation between the State bodies and the pulp and paper industry, a satisfactory solution will be found to the entire problem, and as a result streams will be rendered in better condition than before, materials will be conserved and utilized through this co-operative and scientific research and results will be forthcoming, instead of antagonism and litigation.

Cutting Handling Costs in Small Plants

By HAROLD J. PAYNE

Of the Staff of the Society for Electrical Development*

THE comparatively small plant, built 20 years ago or more, faces an increasingly difficult situation in competing successfully with larger plants built comparatively recently that embody all that is best in design and equipment. Size may be a drawback, in that types of equipment capable of showing large savings in units of considerable size that can be worked continuously are not available in practical units of small size, giving satisfactory results on intermittent or below capacity operation. Age may be a drawback, in that plants built previous to 1910 or thereabout, seldom included adequate provision for future addition of improvements that would in any way alter either the space or layout requirements.



The business of material handling, for instance, is important. Transportation within the plant is receiving primary consideration in modern design with the result that minimum handling costs result. With 10 to 15 handlings required for every ton of product shipped, and with the wage dollar purchasing only approximately 45 per cent of the work that it did as compared with former years (as recently as 1914), the reason for the attention now devoted to these phases of production in new plants is apparent.

For the older plant, however, the situation cannot usually be met by beginning all over from the ground up. Expediency rather demands that the best be made of a difficult situation — that such improvements be provided as can be made with insured return on the investment required. With a limited amount of capital available for such improvements, the further consideration may be introduced not only of investing only in equipment or apparatus promising an insured return but further of investing in that equipment or apparatus promising the greatest return for the dollar invested.

Perhaps this is in a sense elementary yet it paves the way to a discussion of material handling in its relation to other phases of production. Too often, it is believed, the work of getting stock through process is regarded as a necessary evil—expensive but un-

*A non-partisan, non-profit organization having as one of its primary objects the dissemination of authentic information on the performance and operation of electrical equipment.

avoidably so. That the Technical Association of the Pulp and Paper Industry stated two years ago "Human energy, in the last analysis, expresses itself in

thinking and is unintelligent to put it to use where its accomplishment is measured in foot pounds" does not alter that this business of material handling is commonly considered unopen to attack.

Actually few activities within the plant promise greater return for the dollar wisely invested than in

power handling equipment. The number of manual workers at present engaged in this work divided by from 2 to 5 will give an index of the results that may be anticipated through planned powerizing of handling operations. An abstract argument helps to make this clear; a manual operative working hard produces in a day the equivalent of one horse-power hour of energy. Probably in no section of the country the pulp or paper or boxboard operative earns less than $3.20 for an 8 hour day. At this rate, energy is paid for at a figure of $3.20 per horse-power hour. Electrical energy seldom costs over $0.06 per horse-power hour.

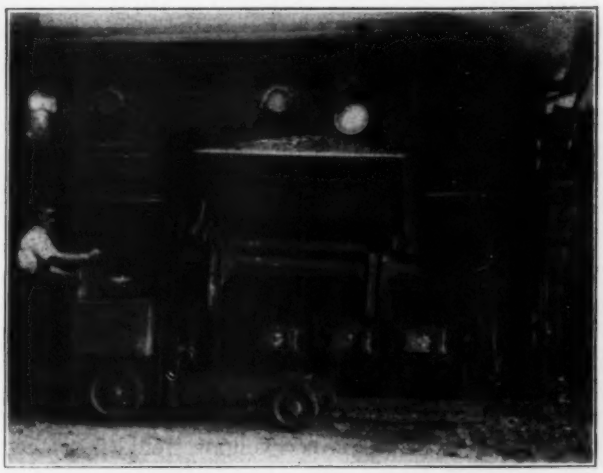
The Ravenswood Paper Co., Long Island City, N. Y., proves the point that the older, smaller plant can if it so desires, cut very definitely into previous handling costs through the use of modern equipment. This concern produces boxboard—up to recently about 46 tons per day. Stock consisting of baled newsprint, jute, manilla and book paper is stored in a yard adjacent to the plant, about 350 feet square. Coal is delivered by motor truck to storage pile 40 feet from the boiler room.

To increase capacity while cutting down on overhead, several improvements having nothing directly to do with material handling were made. Among these was the installation of automatic stokers on the three boilers in the power house—each burning approximately 10 tons of coal per day.

Next came the problem of material handling as such. How could the labor involved in transferring coal from storage to the hoppers in the boiler room, six feet above the floor be reduced? How could the yard gang engaged in moving stock from storage to the beaters be made smaller?

The answer came in an electric industrial truck of two-ton capacity equipped with 3 detachable skid dump bodies, each holding approximately one cubic yard. Because the service planned covered a 24-hour day, one extra battery was purchased with the truck so that one could always be on charge while the other was at work in the truck.

As a consequence of investment in this equipment approximately 7 men have been released for other work, 3 in the boiler room gang and 4 in the yard gang. Moreover, the capacity of the plant has been increased to 58 tons per day and it is still going up. The actual cost of the trucks, including investment, interest, depreciation, power and maintenance runs



under .50 per hour of actual operation—exclusive of the operator's time.

By using three dump bodies, one can always be at the storage pile for loading, one in the boiler room ready for dumping and one with the truck, that may be engaged in coal handling or in moving stock to the beaters. Other jobs are constantly cropping up such as handling heavy pieces of apparatus for the millwright gang or moving supplies about the plant. Because of its flexibility, truck equipment of this

kind can work practically wherever men with hand trucks can travel.

In handling the bales of stock manually, 4 men are usually required—more when 1100 pound bales are water soaked and the yard is in bad shape. Two such bales are moved at a time by the truck. When loose stock is being carried into the mill, dump bodies are used and the transfer to the beaters is made directly without further rehandling. Since 3 men are normally busy in loading the two beaters, this operation—although not yet perfected for continuous performance—promises even more satisfactory results.

Similar experiences of many other users of equipment of this kind might be cited. While in detail there would be little repetition, because the use to which trucks are put varies from mill to mill, the results on the cost ledger would be much the same. Whether in handling logs to grinders, pulp laps from wet machines to beaters or to shipping, rolls through finishing department to shipping or coal from storage to boiler room, the industrial electric properly worked, seldom fails more than to pay for itself within the first year of operation. It is a type of equipment peculiarly fitted to the requirements of the older plant, not too well laid out, because extensive alterations are unnecessary in fitting it to the work to be done.

If the premise is sound that improvement dollars should be spent for equipment that promises optimum return, beginning at the time of installation, then material handling equipment in general and the industrial electric in particular is worthy of investigation.

Lessons in Paper Making

Lesson VIII—Head Boxes and Control

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co.

AT THE risk of boring my readers, I am going to apply to this lesson a phrase already used in several of the previous lessons: **"Depending on the average quality of stock to be run."**

At every stage from the growth of the tree to the finished roll at the box car door, this phrase is applicable, and it is well when ordering paper mill machinery and accessories to bear it in mind.

That this factor is not always given sufficient consideration is very evident by the number of changes ordered after a new mill has been in operation a few weeks.

A case in point. A few years ago, the writer was privileged to assist in the starting up of a new kraft mill. The machine, with its latest improvements, was a beautiful creation, just the thing to delight a papermaker's heart.

Everybody pointed out the high speed facilities, among which was included a high-speed head box, designed so that the mixed volume would flow over the last baffle board, which was inclined in order to accelerate flow, onto the bottom of the head box, which in turn was a continuation of the wire plane, no matter how much pitch was given the wire.

The whole arrangement had been designed for **high speed,** and was ideal for news or kraft at speeds ranging from 700 feet per minute up. Unfortunately, the point had not been remembered that the basis weights of kraft range from 160 lb. to 25 lb. The speed of the machine is governed by the basis weight, and therefore:

The speed of the delivery must be equally controllable whether the machine be running fast or slow.

In the above instance the head box was a failure on slow speeds and a new head box, which permitted **control according to the average quality to be run,** had to be installed after the first few days.

The purpose of the head box may be divided into three distinct functions:

1—To collect the dilute and screened stock from the screen troughs.

2—To **still** the currents and eddies formed by the violence of **flow** to the head box.

3—To be of sufficient capacity to maintain the desired **volume of equal density** behind the slice over the widest deckle desired, to meet the speed of the wire free from currents and eddies—**except those created at the will of the operator.**

Common Principles in Head Box Construction

While the detailed design of the head box depends on the quality of paper to be made, there are certain general principles which are common to all.

The inside **width** of the box must be equal to the widest deckle sheet to be made. When running a narrow deckle, it is easier to control a **greater** supply to a **smaller** area than it is to spread an inadequate supply over a greater area.

The use of baffle boards to quell the rush of the

mixed volume is generally accepted. They are so arranged that the flow is alternately under one and over the other.

The **arrangement** is guided by the average speed to be run. The **design** of all baffle boards contains two factors common to all:

The edge coming in contact with the flow must be of half round section and smooth to prevent the formation of lumps and currents.

This **flow edge** must be set parallel with the bottom of the head box.

Neglect of this last condition is a prolific source of currents. We usually start a run with the slices parallel with the breast roll, knowing that the slices are adjustable, and our **control** consist particularly of throwing them slightly out of the parallel position.

The baffle boards, however, are **not** adjustable, and if not set right will guide the **greatest volume of flow** to the point of least resistance.

In the case of an **underflow,** the greater volume would run to the **high** side; in the case of an **overflow,** the greater volume would flow to the **low** side.

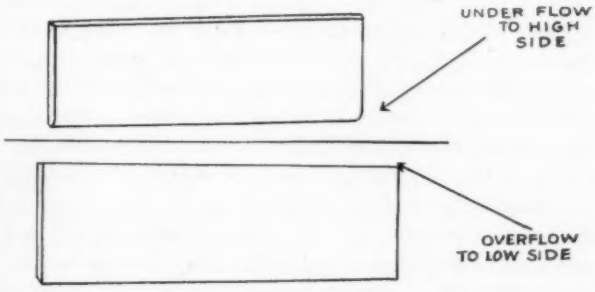


Figure 37

The baffle boards and head box can be tested during a shutdown by allowing clear water to flow through the screens, slowly filling the head box.

Watch the water as it rises and flows gently **over** the baffle-board lip. See that it breaks even. The same applies to the underflow. The final test is to watch the water as it breaks over the apron board to the slice. If the advancing line of water reaches the slice evenly, the box and boards are parallel.

One other factor is common to all head boxes. Provision must be made for quick emptying when shutting down the machine. The device most frequently met with consists of two holes about six inches in diameter cut in the bottom of the head box on the tending side of the machine. They are usually cut one in the second and one in the third compartment. While the machine is running the holes are closed by means of wooden plugs fixed to iron rods of sufficient length to reach the top of the box.

There are other devices in use, various adaptations of slide valves, slide gates, etc. The principal things to aim at, however, are:

1—A quick emptying of the head box so that the wire may be stopped quickly in case of emergency.

2—A disposal of the volume emptied so that it may be saved.

It will be seen that the conditions common to all head boxes have to do with the functions of collection, stilling the inward flow, equal distribution of the mixed volume, and emptying facilities.

Conditions Compelling Differences in Design

The **differences** in design have to do with the manner in which the mixed volume is delivered **to** the slice. Wherein and how shall we be guided as to these differences in design?

In the discussion on the functions of the slice, we made this statement:

> We have, therefore, behind the slice a volume of mixture which **has no means of impulse** except that imparted to it by its own weight forcing it through a restricted aperture. Herewith is the key to our design of head box.

Will the **average speed** at which the machine is to be driven permit a delivery by **flow weight** alone, or will it be necessary to cause an acceleration of speed to the mixed volume in the last compartment of the head box **before** it reaches the slice?

To use a simile: Will we collect our energies for a standing start, or will we cross the starting line with a running start?

Evolution of Speed in Papermaking

The evolution of speed in papermaking is both interesting and informative as to basic principles.

The original craftsman prepared his vat of mixed volume, then gently dipping his deckle frame, filled it, and holding his elbows tight to his sides, by the use of forearms and wrists imparted a steady circular motion, weaving his fibers together as the water drained through the wire mesh. This was the original standing start.

With the advent of the fourdrinier machine the same **fundamental principle for quality** production was aimed at—a **placid pond** behind the slice, the standing start in continuous production with a gentle spray instead of a violent shower to kill the foam. The depth of **head** carried varied from two to twelve inches. The wire was either set level or sloped **back** to the breast roll so that the flow weight speed of the placid head carried would be compelled to overcome the inclination of the wire.

This arrangement permitted the delivery of a **greater volume of lighter density** to the wire and remain under the influence of the shake the **longest** possible time.

As speed gradually increased the principle of the placid pond was still retained.

The breast roll was raised, giving a forward slope

to the wire to accelerate the speed of flow **after** it had left the head box. With this acceleration of flow speed it was found that the area of the influence of shake was passed too quickly; therefore, the wires were lengthened to permit the same ratio of time under the influence of the shake combined with the increased speed.

With the increasing demand for "wood" papers, easier to prepare, came the necessity for increased speed on the machine. The jordan engine took care of the accelerated preparation, and the wires on the machine were inclined and lengthened to the limit of practical utility.

Then the papermaker very cautiously began to increase the depth of his pond. Deeper slices, permitting the use of a greater volume and consequently greater **flow weight** speed, were installed.

With the greater volume in the head box, more currents were created, so various adaptations of **control racks** and perforated plates or boards to control these currents became a part of the head box equipment.

Finding it possible to control the currents created, the adaptation of the head box itself to accelerate flow to give the running start was the next inevitable step.

Finally we have the patent, high-speed inlets, which permit a combination of **the placid pond and high-speed delivery.**

In the evolution of speed, then, we see alterations in design **ahead** of the slice by the inclination and lengthening of the wire, alterations in the design of the slice itself, and alterations in the design of the head box immediately **behind** the slice. All the alterations, however, have one object:

> To **accelerate** the speed of the delivery of the mixed volume to a greater speed than that imparted to it by its **own flow weight.**

This, then, is the question to decide when installing a head box:

Will the average speed at which the machine is to

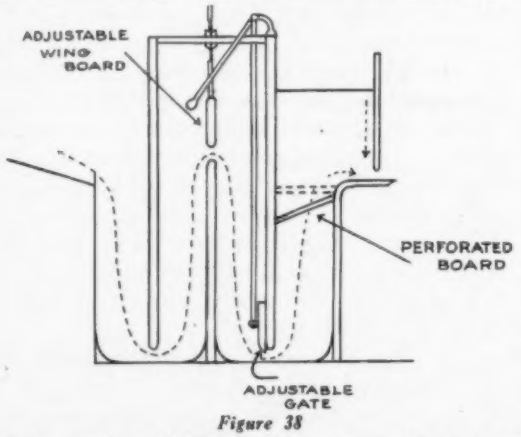


Figure 38

be run permit a delivery whose **flow weight** is sufficient, or will it be necessary to accelerate the flow behind the slice?

We can roughly divide the head boxes into two classes: Those suitable for speeds up to 600 feet per minute with movable adaptations for extremely low speeds, and those suitable for speeds from 600 feet per minute with adaptations for extremely high speeds.

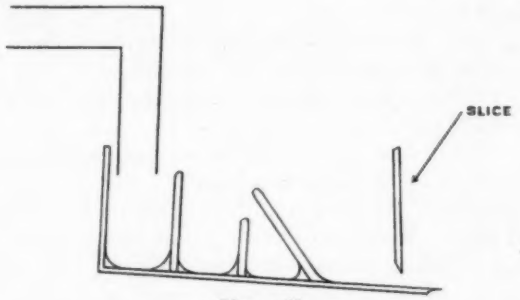


Figure 39

Figure 38 shows a head box with adaptations for the low speeds. These consist of an adjustable wing board set over the overflow baffle board, and an adjustable gate attached to the last underflow baffle board. When making heavy paper of long fiber at low speed it is sometimes difficult to use enough water to screen the stock properly. If enough water is put on to make the screens work evenly the flow weight of the volume is faster than the speed of the machine. By putting down the wing board the depth of the second compartment is increased, permitting the use of more water through the screens, while still restricting the volume from the third compartment.

The adjustable gate works on the same principle. By putting it down a little the water is backed up into the third compartment, thus permitting the use of a greater volume without using its flow weight behind the slice. The gate is also useful for shutting off a little water from the machine without using the main valve, thus leaving the density in the screens the same.

These are not the only advantages gained. The extra volume in the rear compartments give a better mixing of the fibers, eliminating to a considerable extent the lumpy formation and variation of weight across the width of the sheet so evident on extremely heavy papers. The perforated board is simply to break up currents and consists of a board or plate with evenly spaced holes of 5/8-inch to 1-inch diameter.

If it is made of wood the holes should be burned out smooth.

By setting the board at an angle the mixture is directed against the rear wall of the last compartment rather than towards the slice. This is advantageous both for mixing and stilling of currents where a low volume is used. With the greater volume on higher speeds it is not so important and can be set flat, as indicated by the dotted lines in Figure 38.

Figure 39 shows a head box specially designed for high speeds. The whole arrangement is to accelerate the flow of the volume while still breaking up the

currents. With this type of box both current breaking and guiding racks are necessary. With the higher speed the volume of water used is tremendously greater than at lower speeds. Therefore, the mixing of the fibers in suspension is adequate. The bottom of the high-speed head box follows the same plane of the wire.

There are many adaptations of inlets to the head box, each having some special point to recommend it. The inlet to the bottom of the rear compartment has the weight of the mixed volume in that compartment resisting the violence of inlet. The inlet from the side works equally well, provided there are enough compartments, besides the one in which the inlet is situated, to offset the rush to the opposite side. The commonest inlet is a collecting trough from the screens, delivering to the head box across its whole width. The object to be aimed at is—

An equal delivery of equal density across the width of the head box.

If this is attained in the rear compartment the work of the head box is greatly minimized and the number of baffle boards required will be less.

Control Racks

Control racks can be placed in two classes:

1—Those designed to break the rush of the mixed volume, and

2—Those designed to **guide** the fibers or create currents **desired** by the operator.

The fibers in suspension tend to float in the direction of flow, and if unguided the majority will settle in a longitudinal direction, giving a sheet of paper with a strong tear **across** the grain and a weak tear **with** the grain, something like a piece of birch bark.

The function of the **shake** is, of course, to offset this tendency, but on high speed or very free fiber this is hardly enough, and the help of guide racks becomes necessary.

The ideal condition is to create a series of small controllable currents, delivering the volume from the slice in a series of inverted Vs, starting about one and a half inches wide and continually crossing and merging with each other under the influence of the shake.

Figure 40

The diamond peg rack, shown in Figure 40, is one of the best for this purpose. It is made in three styles, as follows:

1—Full diamond, fully submerged.

2—Full diamond, partially submerged.

3—Half diamond, partially submerged.

The first is constructed by using a base of maple wood 2½ inches wide and ½ inch thick, with the upper edges beveled off. The pegs are 1 inch square section, 6 inches long, countersunk into the base diamond shape and secured from the underneath side by screws. The distance between peg centers is 2 inches. The end pieces fit flat against the sides of the head box, but present a half round surface to the flow. Fasten the rack to the apron board about 12 inches from the slice. **Do not use screws to do this; use nails.** The slotted heads of the screws worm the fibers into little hard lumps, causing breaks.

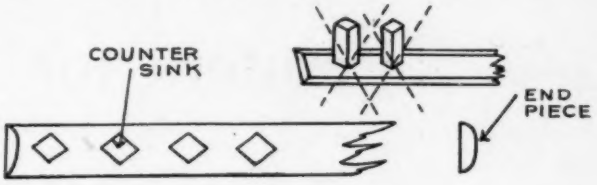


Figure 41

The type of a rack shown in Figure 41 is sometimes objected to as a lump former because of its base. On the heavier sheets with heavy density of volume this is true, but with the lighter sheets and greater volume of water no trouble will be found. By slotting the apron board and setting the base of the rack flush with the board, the trouble is eliminated altogether.

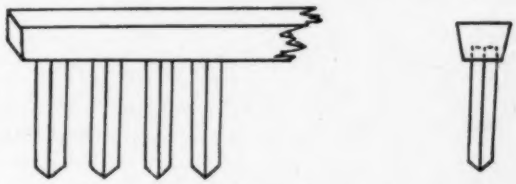


Figure 42

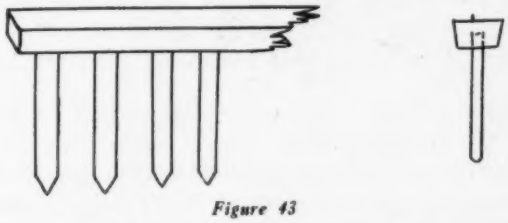


Figure 43

The second type, Figure 42, is designed to do away with the base piece; a top sufficiently heavy and the pegs long enough to keep the top out of water with the highest head carried.

Figure 44

The third type, Figure 43, is similar in construction to the second, only the pegs are flat pieces of wood with the ends angled off.

The racks used to break up the rush are usually of the partially submerged type, set about 2 feet from

the slice. The pegs are round and the distance between them greater than the racks of the guiding type. See Figure 44.

All racks should be of close-grained wood, sandpapered perfectly smooth.

The perforated roll used in connection with the patent inlets is a mechanical adaptation of the rack principle. The important point to bear in mind is that in order to produce a sheet of paper equally strong with and across the grain, **it is necessary to guide and control the volume in the head box immediately before it comes in contact with the slice.** The slice itself can be assumed to control **speed** and **volume** delivery.

The adaptations behind the slice co-operate with the **shake** and control **direction** of delivery.

Pointers for the Engineer

By W. F. SCHAPHORST, M.E.

Atomic Energy

CERTAIN scientists have been telling us for a number of months about the tremendous energy locked up in every atom. They tell us that IF we could but unleash that energy and then put it to work the energy problem would be solved forever. We would be amply supplied with light, heat, and power for all time.

Probably there IS an untold amount of energy in atoms but how are our scientific friends going to get it out? First, there is the problem of releasing the energy and then comes the problem of harnessing it. How will scientists do either?

As things now stand we cannot utilize 100 percent of the energy in coal, oil, and potential water power —energy that is virtually handed to us on a platter. Fifty percent is about the maximum accomplishment when converting heat into work. That being the case, doesn't the utilization of atomic energy look like a hopeless task? Nature has never yet given us something for nothing and it isn't likely that she ever will.

My prediction is this: If a method of releasing and harnessing atomic energy is ever discovered more energy will be required to do the releasing and harnessing than is contained in the original atom. It will be like trying to connect an electric generator and motor in such a way that each will drive the other and at the same time produce a surplus of power. No such precedent has yet been established. Engineers decided long ago that perpetual motion is impossible.

Does Clear Water Scale?

THERE are thousands of engineers of plants throughout the country today who are still ignorant of the scale problem and don't even know that their boiler tubes are coated with scale. For instance, a manufacturer wrote in recently stating that in 75 percent of the reports he receives from officials and engineers, they claim they have no scale or are using "good" well water which does not produce scale. Yet it is a well known fact that well water is often highly impregnated with scale-making properties. In other words, because the water is clear and safe for drinking purposes and shows no muddy deposit, many engineers seem to think that it is free from scale properties.

There are thousands of plants where no attention whatever is paid to scale, yet every little while they find it necessary to retube their boilers, and they simply put that down to wear and tear.

To Detect Hot Bearings

A SIMPLE way in which to detect a hot bearing is to paint a stripe on the bearing that will change color with increase in temperature. An engineer writing in a German paper states that such a paint is readily made from a mixture of mercuric iodide and cuprous iodide. He paints a stripe about an inch wide on the bearing. It is bright red when cold but fades on warming to a temperature that is noticeable to the touch and disappears when the temperature reaches 140 degrees F. As soon as the color begins to fade the operator sees the danger signal and has time to correct the difficulty before serious trouble results.

Improving Water Turbine Efficiency

AFTER making some careful tests on water turbines, a prominent engineer finds that by admitting air to the turbine runner a higher turbine efficiency is obtained at part load. When operating at full load, however, there is no advantage in admitting air. By admitting air, eddy losses in the runner are broken up and the "pumping action" is prevented in the draft tube, all of which commonly occur when operating at part load. Thus in one test when operating at half load, the efficiency was increased from 63 percent to 67 percent, and when operating at quarter load it was increased from a little less than 40 percent to about 46 percent. To those who operate hydraulic plants this information will doubtless be of considerable interest. It indi-

cates, though, that great care must be exercised in the employment of the air.

Friction Clutches

A USER of clutches has written that the clutches used nowadays are really "clamp clutches" and not "friction" devices. He states that the earlier forms of friction clutches were built around a small hub like that of a pulley and were known as "hub friction clutches." He says that these friction clutches could always be depended upon to do two things: (1) to slip when you wanted the clutch to hold, and (2) to hold fast when you wanted it to let go.

This writer, however, does not agree that friction clutches should generally be termed "clamp clutches." It is true that a friction clutch does pick up its load by friction, but one does not need to clamp it in place if one does not care to. It can be allowed to transmit its load with the clutch slipping on a great many types of clutches. That is, the clutch can be "nursed" partially into position and then thrown out again as many times as is desired without ever clamping or locking the clutch entirely shut. It may be that a positive type of clutch can be regarded as a clamp clutch, but there are surely a great many clutches on the market that cannot be called clamp clutches.

If these so-called friction clutches were anything else than friction clutches, it is plain that under certain conditions manufacturers would not add to these clutches what is known as "positive drive pins." These positive drive pins are added so that the load can be picked up by friction to a certain point and from that point on the load is carried by the pins in a positive or clamping fashion so that there can be absolutely no slipping of the frictions under any condition.

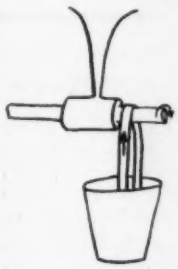
A clutch of the latter kind is of course a "friction clutch" up to the point where the pins do the driving. But from that point friction may not have anything to do with it. It may not even be a "clamp clutch." It may be a "positive locking drive"—the word "clutch" being eliminated entirely.

Caring for Hot Boxes

A method I once saw successfully applied in a large plant was: Several ordinary house fans were made to blow air against a bearing that was inclined to heat. Air is better than water for cooling bearings in that it does not mix with or disturb the oil in any way, consequently lubrication is maintained at its most efficient point, considering the handicap. With the fans in use, the temperature of the bearing would go up to about 110 degrees and stay there, whereas before the fans were employed the bearing would get so hot that it would smoke.

Fans and the application of water, however, should be only temporary makeshifts and under no circumstances should they be used permanently simply because they "work." Get rid of the fans and water as soon as possible because they are very expensive to maintain as well as unsightly.

An excellent method for cooling where conditions allow and where water cannot be readily poured on the bearing is shown in the sketch herewith. An endless belt is placed on the shaft close to the hot bearing and is allowed to hang down into a pail of cold water. As the shaft rotates as shown, it causes the saturated belt to move in the direction indicated by the arrow. Cold water is thus drawn upward onto the shaft, keeping it wet and cool. Any flexible belt that absorbs water readily will serve the purpose. Naturally the belt should be kept as close to the hot bearing as possible. With this method there is no splashing of water and there is no mixing of the water with the lubricant.



Bettering Combustion

UNTIL 1901, the genuine old-fashioned concave arch was the only type used. In that year the first "flat arch" was patented and placed on the market and since 1901 other "flat arches" have been patented and placed on the market. The "flat arch" soon demonstrated its superiority over the old-fashioned REAL arch.

As is usually the case the earlier designs were largely arbitrary and such factors as kind of fuel, size of equipment, boiler rating, etc., were not given much consideration both because of ignorance and lack of appreciation of their importance. Besides during this earlier period fuel was cheap and labor and material costs were low. There was little incentive for scientific improvement. High efficiency was considered of minor importance just as is the case today in localities where fuel, labor and materials are cheap.

Years of usage proved that old-fashioned arches had their limitations and objections. The limitations were largely constructional but from a combustion standpoint it was generally agreed that a concave top surface is not ideal for an even fuel bed. In addition, old-fashioned arches always involve the separate arch support of curtain walling and in many cases the necessity of secondary arches. These conditions seriously increased the difficulties of air sealing.

The recent development of the "flat arch" has to a large extent remedied these faults. From a construction standpoint there is practically no limit today as to length and width. The entire arch is at a uniform height above the fuel. The lower, or reflecting surface is a true plane, which is the ideal condition. The maintenance problem is simplified.

Editorial Comment

By WILLIAM SIBLEY

More Light for Less Cost

THE contribution to industrial efficiency made by good lighting has been enormous, but one that steadily increases as time advances and improvements are made to equipment. The old carbon lamps, with which electric lighting was ushered into our existence during 1890, were an immense improvement over the previously existing kerosene or gas flame, but grossly inefficient as compared with the tungsten coiled filament bulbs that replaced them.

One of the outstanding developments of the past two years is the inside frosted lamp. This lamp, with its vastly improved filament, is not only easier to keep clean by reason of having a smooth exterior, but provides much better diffusion of light than those with outside frosting. In addition, economic waste in the variety of lamps is reduced by the inside frosted lamps, since five models ranging from 25 to 100 watts each, will replace forty-five different types of lamps now in use.

Because new lamps are frequently used in old sockets, and used merely to replace old bulbs, the newer types often give far less increased lighting efficiency than might reasonably be expected. This is because insufficient thought and attention is paid the reflector and auxiliary equipment. The development of the concentrated filament lamp created a light source of intense brilliance but of comparatively small area, and it is this development that not only permits, but makes necessary the use of a reflector that will give greater control of light. Lighting engineers are loud in the denunciation of the tin-coned shade—a type of reflector that is still used despite the fact that it is entirely unsuited to 90 per cent of the lamp and lighting needs of today. Indeed, it may be said, the use of scientifically designed reflectors is as important to lighting efficiency as the employment of improved or higher powered bulbs.

Probably it is only natural for the one in charge to feel that the light bill is an expense item which should be held down to the minimum. And while certainly no one would advocate waste, yet it must be said that this idea is carried out frequently at the expense of production, imperfect workmanship, and increased accidents. The few dollars possible saving in lighting costs that so result is misguided economy of the worst kind. From reliable authority we learn that good lighting will increase production at the rate of 15 per cent while increasing the pay-roll cost but 2 per cent. Certain it is, the elimination of one accident through the use of better light would probably pay the added cost of such lighting many times over.

We in America are permitted to enjoy good lighting at a cost considerably lower than any other nation. Indeed, contrary to price trends in many other commodities, lighting costs have been reduced 42 per cent since 1914, with the result that we now have the cheapest artificial light in history. Couple this fact with the development of the metal filament lamp which provides far more light for the same current consumption, and we find ourselves receiving 1,200 lumens for 1 cent.

This means that present day styles of electric lamps offer double the illumination value of 10 years ago for the same or slightly less amount of money. More scientific designs in tungsten filaments, globe shapes, and reflectors, together with refinements and economies in methods of production, combine to give us the highest degree of lighting efficiency ever known. Whereas the industrialist formerly installed good lighting from reasons of increased production and decreased spoilage, he now purchases correct illumination for the same reason—plus reduced lighting costs.

Making Employees Partners

SELLING stock to employees in an effort to make them participating members in the organization is a policy that has become so widely adopted that today more than 3,200 industrial firms are giving their employees the opportunity to acquire stock on partial payment plans. Two great advantages are claimed for employee stock ownership, viz, the encouragement of thrift and systematic savings, and the increase of labor's interest in the success of the business.

Outstanding among the organizations encouraging employee stock ownership is the American Telephone and Telegraph Company, which concern now has a total of 57,000 shares with a market value of over 86 million dollars held by workers. Among other large corporations that have found this scheme to be of benefit are the meat packing companies, Standard Oil, International Harvester, Eastman Kodak, Bethlehem Steel, Procter & Gamble, National Biscuit, several railway systems, etc. Employees' holdings in these companies range from 5 to 65 millions of dollars.

Broadly speaking, there are four accepted plans for encouraging such stock ownership:

—— on Timely Subjects

1—Stock sold to workers at market value;
2—Stock sold at par;
3—Stock sold at a predetermined discount;
4—Stock given to employees in recognition of service.

The latter plan, that of giving stock outright, is not generally favored, since it has been found that gifts are frequently misinterpreted by the workers, that the proposition smacks of paternalism, and that invariably the idea defeats its intended purpose. The other three forms are in wide use.

As for the details of the various plans, these may be classified somewhat as follows: 1—eligibility requirements; 2—type of stock offered; 3—terms of payment; 4—terms of redemption; 5—contribution by employers, if any; 6—other special provisions.

Some companies have no eligibility requirements, any worker being permitted to subscribe to the stock accumulation plan. Other companies require periods of prior service ranging from 2 months to 5 years, while a few establish a minimum salary requirement. Several firms fix a maximum amount, such as $2000 as being the total obtainable under the employee stock-ownership plan.

Either common or preferred stock may be offered, a few companies offering its own bonds. With regard to the latter, however, it is common for the company to enter into arrangements with the underwriting concern, the bonds actually coming from that source. With a few companies, employees do not purchase actual stock, but merely subscribe to certificates of ownership. Others hold the stock within the company by incorporating a clause in the purchase contract which compels the employee to sell back the stock at the time of discontinuance of service.

In the matter of payment, the usual practice is to deduct the partial payment from the earnings of the worker on the established pay-days. In some cases, the deduction is $1.00 per share per week, while in the majority the amount to be deducted is optional with the worker, there being, of course, an established minimum.

The terms of redemption vary with individual companies. Usually, balances are returned, plus interest ranging from 4 to 7 per cent. It has become almost standard practice for firms to buy back in the same manner sold—either at par or at the market price.

In quite a number of cases the firm contributes, merely as an incentive to purchase, a fraction of the amount paid in by the employee. These fractional contributions range from 5 to 25 per cent of the purchase price. In a very few cases, bonuses are annually given every stockholder, such bonuses taking the form of $1.00 the share the first year, $2.00 the share the second year, etc.

Rightly conducted, employee stock ownership plans can be of great benefit to an organization. Stock ownership contributes to thrift, develops better citizens, reduces labor turnover, increases interest in the welfare of the company, tends to cut down waste of materials and property, and does much to eliminate friction between employer and employee.

The Economists' View of 1927

ALMOST any review of opinions or expressions regarding future business will reveal the one outstanding characteristic: Confidence. As a consensus of opinion from the leading economists, we present the following:

Babson:

General business should continue at about the present levels. There are no indications of any material price fluctuations for the immediate future, and production should continue at relatively high levels.

Alexander Hamilton:

There are sufficient favorable factors to prevent any trade reaction from becoming a general business depression. There has apparently been some overproduction, but not of serious proportions.

Bankers Economic:

While there are no indications of general business exceeding its present levels, it is significant that money has become easier. Europe appears to be making persistent headway in straightening out her finances.

Gibson:

General business promises to continue in good volume with extremes neither one way nor the other. The long term outlook is for lower commodity prices, although general demand should keep production volume at a high level.

Brookmire:

Business may show a slight decline during the first quarter of 1927. Credit extensions should be carefully scrutinized in anticipation of possible declining business profits. The present tendency is toward lower volume and better quality.

Harvard Economic:

The present level of general business, we believe, should continue during the first quarter of 1927, although some curtailment of production may reasonably be expected to follow.

New Developments of the Year

Notes of New Mills, Alterations and Additions to Pulp and Paper Plants, Either Completed in 1926 or Projected This Year

DURING 1926, there was a notable development in the construction of new pulp and paper mills both in the United States and Canada. Many improvements and additions have also been made to existing plants thus providing a greatly increased production, particularly as regards newsprint paper. Started in 1926 were some twenty new fourdrinier machines, representing an increased production of 1,880 tons of newsprint paper. Other additions to existing machinery, as well as new mills, are projected for 1927. The accompanying notes of new mills, and additions, alterations or improvements to plants which it is hoped will be useful for reference are based on information supplied to THE PAPER INDUSTRY by mill executives, construction engineers and others.

Enlarged Paper Mill at Monroe, La.

Work has started on an enlargement of the kraft pulp and paper mill of The Brown Paper Mill Company, Inc., at Monroe, La. George S. Holmes, vice president and general manager, has for several months past been working on plans for additions to the existing plant. A contract has been placed with the Morton C. Tuttle Company, Boston, for the erection of a machine room and finishing room 40 ft. x 404 ft., two stories high; wash room 54 ft. x 73 ft., two stories high; a digester house 54 ft. x 36 ft., two stories high; a recovery room 90 ft. x 72 ft.; and a mud filter room 54 ft. x 37 ft., besides considerable miscellaneous work. George F. Hardy will act as designing engineer.

A Pusey & Jones 176 in. fourdrinier, equipped with removable fourdrinier part, has been ordered; it will have forty-six dryers and two stacks of calenders. A battery of six Shartle breaker beaters will be a feature of the new addition to the paper mill.

The pulp mill capacity will be enlarged by three new sulphate digesters each 20 ft. x 8 ft. The use of rotaries and smelters will be eliminated in the recovery plant by the installation of three Wagner furnaces. The mill will be equipped with all necessary machinery for the production of a special grade of kraft board used for lining corrugated boxes.

New Sulphite Mill to Use Box Factory Waste

San Juan Pulp Manufacturing Company, Inc., Bellingham, Wash., began operations October 12, 1926, in their new 40-ton sulphite mill, manufacturing unbleached sulphite from box-shook trimmings of the large box-shook mills in Bellingham and Blaine, the wood consisting of western spruce and hemlock in about equal proportions. The Jenssen acid system is used and the wood is cooked in two 15x49 digesters. Included among the equipment are thune screens imported from Norway. Ossian Anderson, president of the company, has built other sulphite mills on the coast and has others in contemplation.

New Sulphite Pulp Mill

The Rainier Pulp and Paper Company is building a 100-ton sulphite mill at Shelton, Wash., as a source of supply with the National Paper Products Company, it being intended to ship the pulp dry, and a drying machine for this purpose is being constructed by the Black-Clawson Company.

New Mill at St. Helens, Oregon

St. Helens Pulp & Paper Company, St. Helens, Ore., formally opened their new plant for the manufacture of sulphate pulp and kraft paper on Saturday, December 18, 1926, a representative of the Governor of Oregon being present to make the principal address at the dedicatory services. A large attendance of interested stockholders and other invited guests, including prominent State and municipal officials and members of local chambers of commerce in the district, was welcomed by W. P. Hawley, president of the company.

The St. Helens mill is advantageously situated on tide water on the Oregon bank of the Columbia river and is also connected with the Spokane, Portland & Seattle Railway Company's line of road. The buildings are of concrete and steel and include two wood preparing rooms, one for cutting up slabs only and the other for logs as well as slabs. The digester house is equipped with a 24-hour storage bin above the digesters, which are of the welded rotary type. There are four 500-horsepower Erie City boilers each designed for 250 lb. pressure; both boilers and recovery room are served by the same stack of concrete-lined tile, 300 ft. high, with an inside diameter of 14 ft. on top, constructed by the Rust Engineering Company, Pittsburgh.

The paper machine is a rope-driven Beloit of 168-inch width having the usual Beloit removable fourdrinier, oscillating suction boxes, Aldridge shake and other modern improvements. The Terry Steam Turbine Company, Hartford, Conn., supplied the variable speed steam turbine and constant speed turbine, the exhaust from which is used for drying the paper. The electric power is furnished by a 1,500 kw. bleeder-type General Electric turbogenerator.

Ten Horne beaters equipped with lava stone beater rolls feature the beater room which is also equipped with two Horne jordans driven by synchronous motors.

A full trim Moore & White cutter and layboy, with Mamco

New plant of San Juan Pulp Manufacturing Co., Bellingham, Wash.

counter and marker, handles the paper in the finishing room which is cut to required sizes by an 84-inch Seybold trimmer.

The officers of the St. Helens Pulp and Paper Company comprise W. P. Hawley, president; Willard P. Hawley, Jr., vice president; Max Oberdorfer, general manager; Irving T. Rau, secretary and treasurer, and H. F. McCormick, chairman of the board.

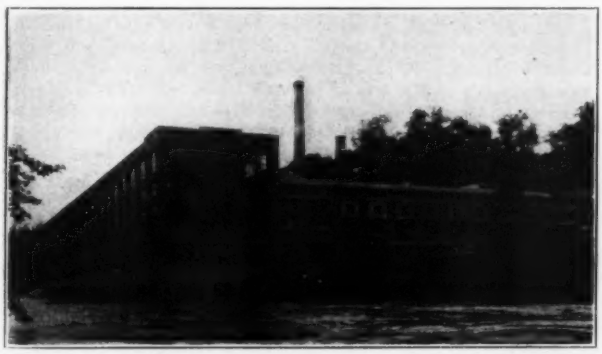
New Sulphate Mill at Camas, Wash.

Crown Willamette Paper Company, San Francisco, Cal., has completed a new sulphate pulp mill at Camas, Wash., which has a productive capacity of 60 tons, sawmill waste from the Long-Bell Lumber Company, at Longview, Wash., being the raw material used. Several novel pieces of equipment characterize the new mill, chief of which is an installation of the Nordstrom tower for drying the chips going to the sulphate digesters, the drying medium being the gas from the sulphate recovery furnaces. A double function is served by the tower, which not only dries the chips and effects a saving in chemicals, but at the same time destroys or breaks up the mercaptans, which are the source of the objectionable odor usually associated with a sulphate mill, the mercaptan odor in the gas from the incinerator disappearing in the passage of the gas through the tower. By taking the gas from the digester blow-off to the rotaries and the gas leakage from the smelters to the fan supplying the towers, almost all the odor of the mill can be removed.

A continuous causticizing system of the Mount type with a rotary kiln for reburning the lime forms part of the general equipment of the mill, being similar to that employed at the Tonawanda mill, Tonawanda, N. Y.; Oliver filters are used for washing the pulp, as at Tonawanda. Other equipment comprises a quadruple effect evaporator by Zaremba Company, three rotary incinerators by Manitowoc Shipbuilding Corporation and piping specialties by Crane Company.

New Machine Room for Jessup & Moore Company

Jessup & Moore Paper Company, Philadelphia, has made an addition of a new machine room of concrete, brick and steel construction to its Augustine mill at Wilmington, Del., of



Augustine mill of Jessup & Moore Paper Co., Wilmington, Del.

dimensions 30 ft. x 361 ft. The foundation work necessitated special features of construction, the mill being built on concrete piers placed on the rock bottom of Brandywine Creek.

Penobscot Chemical Fibre Co. Make Changes

The Penobscot Chemical Fibre Company, Great Works, Me., have made a number of alterations and additions to the mill during the past year. The roof of the soda pulp drying machine room has been reconstructed, increasing the head room from 14 ft. to 24 ft., and a new traveling crane serving the pulp drying machines has been installed. This room is approximately 190 ft. long and 55 ft. wide, and the change will give much better light and ventilation in this department.

The riffler buildin, housing a new Brown stock riffler installation has been constructed as a vertical extension of existing buildings. This addition is in general one story, and covers an area of approximately 7,000 sq. ft. Morton C. Tuttle Company, Boston, were the construction engineers.

Sulphite Plant for Algonquin Paper Company

The Algonquin Paper Company, Ogdensburg, N. Y., completed a sulphite mill last November which embodies every modern improvement, including Jenssen acid towers. It will have a daily production of eighty tons, all of which will be used in the adjoining paper mill of the company.

New Building and Machines for Louisiana Company

Louisiana Pulp and Paper Company began operations at Bastrop, La., in September, 1925, with a production of sulphate pulp and kraft paper, averaging 150 tons of the former and 135 tons of the latter daily. In July, 1926, ground was broken for the construction of an additional unit to house a new 148-inch cylinder machine and the building now awaits the equipment. When this is completed the Louisiana Pulp

New cylinder machine building, Louisiana Pulp & Paper Co., Bastrop, La.

and Paper Company will have a daily production of 200 tons of pulp and 180 tons of paper. The new building is constructed of concrete, steel and brick throughout; it parallels the original paper-machine room completed in 1925, which it resembles in construction and layout. The new cylinder machine is a product of the Beloit Iron Works, Beloit, Wis. Accessory equipment include four Majestic jordans of E. D. Jones & Sons Company's make and two Dilts beaters.

The pulp-mill building of the Louisiana Pulp and Paper Company is a structure, 145 ft. x 200 ft. in dimensions, three stories high, having a battery of eight welded steel digesters and five Zaremba evaporators. Manitowoc Engineering Company's incinerators and double-disk evaporators feature the recovery room which has eight soapstone furnaces.

Improvements at The Chillicothe Paper Co. Mill

Early in 1926, The Chillicothe Paper Company, Chillicothe, Ohio, built an addition to their finishing room, which gives additional floor space of 12,000 square feet. In connection with this building a heating plant was erected which takes its heat from the condensate from the paper machine, thereby accomplishing the two results of cooling the water sufficiently to pump to the boiler room and supply the necessary heat for the new building.

A roll grinder built by the Lobdell Car Wheel Company is a new article of equipment which enables the company to do their own roll grinding. This is housed in an addition built to the machine room and on the same level. In order to assure the purest kind of water so necessary in fine paper manufacture, two 96" sand filters of the pressure type were installed. These filters are working admirably and enable The Chillicothe Paper Company to produce a sheet of paper uniform in color and free from dirt specks which formerly caused trouble.

A coal handling system, to include a crusher and elevator, is now being constructed to facilitate the handling of coal both in storage and to the boiler room.

Additions to Everett Mill at Lowell

Everett Pulp and Paper Company, Everett, Wash., added new machinery early in the year to the plant in Lowell. To accommodate the extra equipment, additions to the mill building were made, consisting of a machine room 50 ft. x 324 ft., two stories high, and a new paper finishing room 68 ft. x 178 ft., also two stories. The new buildings are of modern type, constructed of concrete, steel and brick.

The paper machine, of Pusey & Jones make, is electrically driven, the sectional drive being of the regulator type, with Falk gears connecting the motors of the paper-machine rolls.

View of completed plant of Everett Pulp & Paper Co., Everett, Wash.

As accessory equipment, mention may be made of suction pumps supplied by the Nash Engineering Company, of Norwalk, Conn., Moore & White rotary screens and a Moore & White winder. The Beloit Iron Works furnished triplex stock pumps, and E. D. Jones & Sons Co. three motor-driven jordan engines, in addition to a broke beater. Both machine and finishing rooms are provided with heating and ventilating equipment, as well as vapor absorption system by the J. O. Ross Engineering Corporation. White water is reclaimed with a saveall of the Dorr type.

The finishing room is equipped with a motor-driven web calender furnished by the Norwood Engineering Company, Florence, Mass.; three rotary cutters with layboys by the Maxson Automatic Machinery Company, and other finishing machinery.

Rolls will be ground by an electrically driven roll grinder of the latest type made by the Farrell Foundry Machine Company, Ansonia, Conn.

The pulp department of the mill has been equipped with four new steel-welded digesters made by the American Welding Company, Carbondale, Pa., and a new bleaching system for high density operation as designed by the Stebbins Engineering and Manufacturing Company, Watertown.

Wide Machine for Port Angeles Mill

Washington Pulp and Paper Company, Port Angeles, Wash., is adding to its plant a 234-inch Rice, Barton & Fales fourdrinier which is expected to be in full operation next April.

Additions to Mead's Chillicothe Mill

The Mead Pulp & Paper Company of Dayton, Ohio, have made a number of additions and improvements to their plant at Chillicothe, Ohio. Chief among these have been the erection of a modern new office building, the tearing down of the old office and the erection over its former site of a huge, new, two-story roll and sheet finishing building, a new clay-storage building, a new paper machine room capable of housing two large paper machines and a modern pulverized coal boiler plant, housing three pulverized coal boilers. Practically all of this work was carried out under the supervision and direction of Harry P. Crowell, construction superintendent, with the Management Engineering and Development Company, of Dayton, Ohio. The fourdrinier machine, electrically driven, has a wire 160 inches wide. Only one machine is being operated in the new machine room at the present time, but it is expected to install another machine at an early date. The new finishing room is a capacious building, some 700 ft. in length and 100 ft. wide, which houses the supercalenders and rewinders, as well as the sorting department and inspecting offices.

The new boiler plant has many pieces of machinery and equipment not ordinarily found in paper mill power plants. The Lopulco storage system is an important unit of its equipment for burning pulverized coal. The steam generating equipment, consisting of boilers, pumps, superheating system, motors, electrical control board and meters, is housed in a modern steel and brick building, 118 ft. 6 inches long, 55 ft. wide and 58 ft. 9 inches high.

New Wide Machine for Coated Paper Stock

The Champion Coated Paper Company, Hamilton, Ohio, has installed its tenth Black-Clawson fourdrinier machine, the latest one being of a width of 172 inches, which is considered unusually wide for coated paper stock. The new machine is considered a rather remarkable piece of workmanship, equipped with the Voith high-pressure stock inlet, Kutter forming board, Wentz "No Deckle" device and Devine wire oscillator. The wire is 80 ft. long and 172 inches wide, with a 20-inch breast roll and 30-inch suction roll. The table rolls are built in sections of five and six rolls with the rolls arranged in tandem so that if one roll turns, all the rolls in the section will turn at the same time on their anti-friction bearings. To facilitate quick wire changing, the table roll section, suction box section and couch roll are removable as separate units. The whole operation is performed by the use of hand ratchets, this being made possible by simplicity of design. The operation of stringing a wire is usually a difficult performance but with a new automatic principle used on the Black-Clawson machine, it should be possible for inexperienced help to put on a wire with as much ease as putting on a felt.

The new machine is equipped with three presses having 26-inch rubber-covered bottom and 22-inch granite top rolls. The construction of the press frame allows the rolls to be removed without the use of a crane. The felt rolls for press and dryer sections are carried in self-aligning sleeve-tight bearings. There are three pairs of smoothing rolls, one ahead of the dryers and two between sections. The drive is sectional electric of Westinghouse make.

Waterway Company Installs New Machine

Waterway Paper Products Company, Chicago, has added a new Black-Clawson high-speed newsprint machine to its equipment, which is designed to run at a speed of upwards of 1,000 ft. a minute in the remanufacture of newsprint from old newspapers and other paper. The fourdrinier is one of the removable type with a wire 90 feet long and 204 inches wide and equipped with a 36-inch suction couch. As with similar Black-Clawson machines, the forward presses can be removed without the use of a crane. The bottom presses are rubber-covered, of thirty inches diameter, the top rolls being of granite and 24 inches in diameter. The machine has forty-four 5-ft. dryers arranged double deck with Sheahan paper carriers. The felt-carrying rolls are equipped with self-alining sleeve-type bearings which can be removed with the rolls without removing a bolt. The press felts stretcher is located in the basement and the bottom felts return through the basement. A ten-roll calender stack, a uniform speed reel, and a Black-Clawson two-drum winder complete the machine, which is driven by a Westinghouse sectional electric drive.

Cushnoc Paper Corporation Adds New Machine

Cushnoc Paper Corporation, Augusta, Maine, started up a new newsprint machine in the last week of December, 1926. This is a modern machine of Rice, Barton & Fales construction, 154 inches wide and designed to run 900 ft. a minute, which should give an average production of 75 tons a day.

The company has also installed during the year, a new 624 hp. Edge Moor boiler, burning pulverized fuel; a sulphite digester, six 4-ft. pocket grinders for 2 ft. wood, together with necessary additions and improvements to buildings to house this material. By the new machinery and equipment, the newsprint production of the Cushnoc Paper Corporation has been increased to 140 tons daily.

Improvements at Crystal Tissue Mills

The Crystal Tissue Company, Middletown, Ohio, have added to their mill plant a two-story pulp warehouse and have completed a central bleaching plant which replaces the separate bleaching plants in the two mills of the company. The chlorine gas method of making bleach liquor is used and both mills are supplied with bleach from the central plant.

Improvements in boiler-house equipment and power plant capacity during 1926 include a steam turbine, with electrification of all beaters and paper machines, each being equipped with individual motors. Production has been increased nearly one-fifth by improvements to machinery and new equipment so that the mills are now turning out aproximately 60,000 lb. of tissue a day, five cylinder machines being operated with a total trim of 480 inches.

Maxwell Paper Company Starts Operations

The Maxwell Paper Company, with mill at Franklin, Warren County, Ohio, has started the manufacture of sulphite bond, envelope and rag-content paper. The new company is affiliated with The Howard Paper Company, Urbana, Ohio, and The Aetna Paper Company, Dayton, Ohio. Being advantageously situated in the heart of the Miami Valley, the management is counting upon low freight rates, low power cost, wide deckle and a high-speed machine for economical manufacture. The mill is equipped with a Rice, Barton & Fales machine of 152-inch width, bird screens, Cameron winder, Pope reel, motor-driven Noble & Wood jordans, Bird saveall, Voith stock inlet and Dayton high-speed beaters. The paper machine is driven by one 500 hp. and one 200 hp. Terry steam turbine.

Maxwell Howard, president of Aetna Paper Company and of the Howard Paper Company, also heads the Maxwell Paper Company.

Ingenious Arrangement of Dryers on New Machine

Keith Paper Company, Turners Falls, Mass., has displaced an older and smaller papermaking machine with an 86-inch fourdrinier of Rice, Barton & Fales make for the manufacture of high-grade bonds and ledgers which has called for the exercise of considerable ingenuity in construction. In order to accommodate a longer and wider machine in the space occupied by the one discarded, every part had to be closely assembled. A new arrangement of the dryers effected space economy, these being arranged in pyramid form with the apex of the triangle at an angle of 45° with the base line. Ample room was obtained in this way for felt dryers, felt-carrying rolls, automatic stretcher and guides, with an unobstructed path for moisture rising from the dryers to the ventilators, and complete elimination of steam pockets as effective in the horizontal double and triple deck assembly of dryers. Only one dryer felt is used, which is at all times below the web of paper. Improved conditions of drying have been obtained, with complete elimination of cockling and blistering. The machine is practically beltless, the motive power being oil pressure as developed by the Waterbury Tool Company in their Universal Hydraulic Variable Speed units. A complete oiling and filtering system is provided for both sectional drives and primary drive, whereby the oil is carried by gravity to the oil-regulating valves and thence to the bearings, from which the waste oil passes to a central filter and separator to storage.

The speed of each section can be regulated by push buttons in order to correct draw between machine units. These buttons are located at vantage points on the tending side of the machine frames.

Miscellaneous Improvements

Recent additions and alterations reported by the Morton C. Tuttle Company, Boston, include completed paper-storage warehouse, additions to power house, and turbine foundations for the Southern Paper Company, Moss Point, Miss.

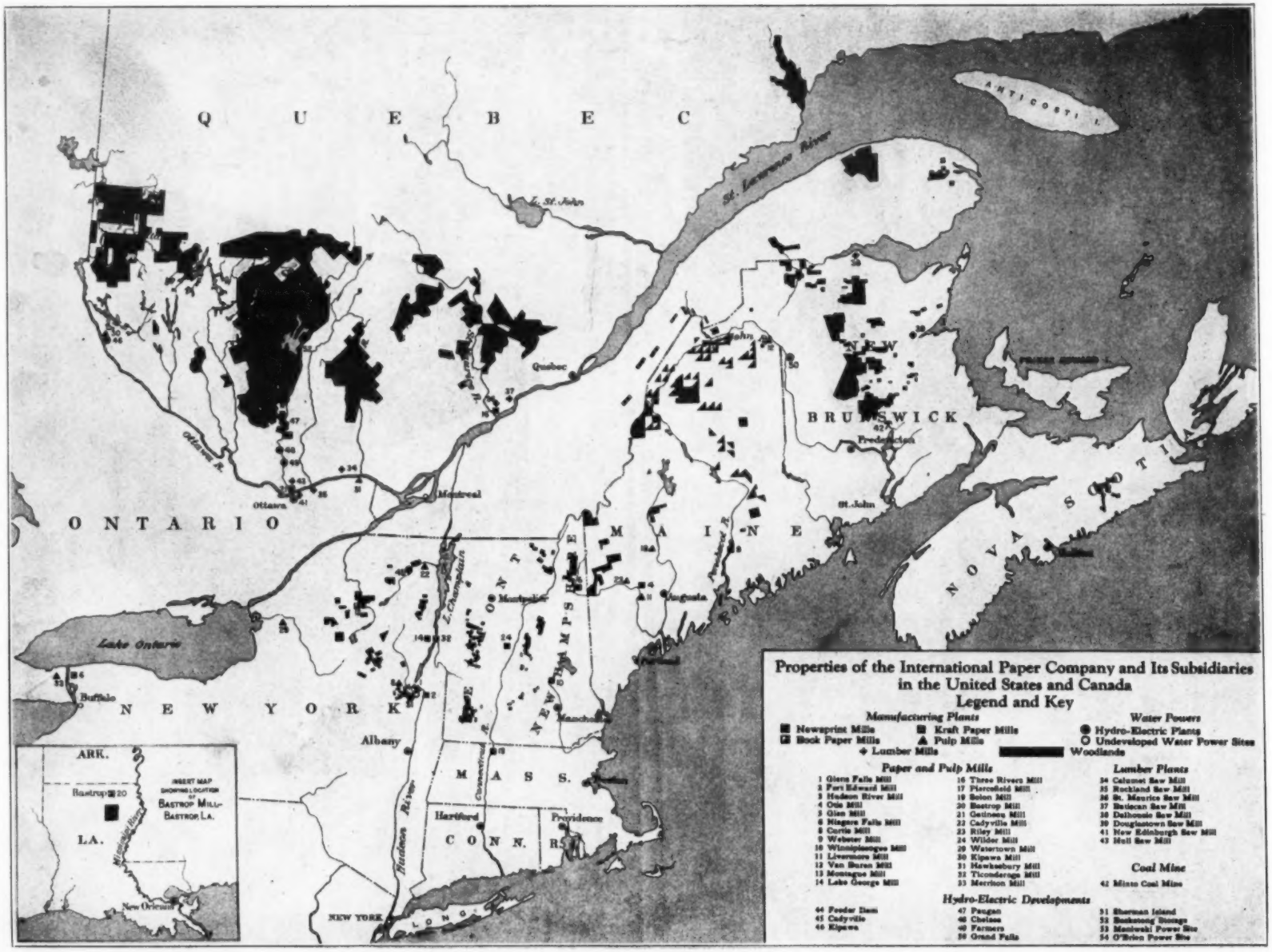
The West Virginia Pulp and Paper Company has made an addition to its Williamsburg (Pa.) plant consisting of concrete and structural steel finishing and storeroom.

Bates Valve Bag Company, Chicago, has built a manufacturing plant at Covington, Va., for paper-cement bags, consisting of a building 240 ft. x 80 ft. one story high, of structural steel frame, brick walls and timber roof.

New Specialty Mill at Thorold, Ont.

Superior Paper Mills, Ltd., Thorold, Ont., will begin the production of white and colored specialty papers in a new two-machine mill early next month. The equipment consists of a one-cylinder tissue machine and one fourdrinier machine, three 2,000-lb. beaters and the usual accessory machinery. The mill is located in the heart of the papermaking industry in southern Ontario, assuring an abundant supply of raw material and skilled labor. Under the direction of E. P. Foley, well known as the inventor of the Foley bleached groundwood process, the mill will specialize in the manufacture of pattern tissues, twisting and wrapping tissues and colored specialties not at present manufactured in Canada. The capacity will be 3,000 tons yearly. The president of Superior Paper Mills, Ltd., is J. M. Cathcart, who has had thirty years' experience as superintendent and manager of mills. J. T. Berhalter, vice-president in charge of sales, has had many years of experience in merchandizing specialty papers, and R. E. Liptrott, secretary-treasurer, was for the past eight years connected with the Interlake Tissue Mills, Ltd.

The Maxwell Paper Company, Franklin, Ohio



Properties of the International Paper Company and Its Subsidiaries in the United States and Canada
Legend and Key

Manufacturing Plants

■ Newsprint Mills
◪ Book Paper Mills
◧ Kraft Paper Mills
▲ Pulp Mills
✦ Lumber Mills

Water Powers

● Hydro-Electric Plants
○ Undeveloped Water Power Sites
▬ Woodlands

Paper and Pulp Mills

1 Glens Falls Mill
2 Fort Edward Mill
3 Hudson River Mill
4 Otis Mill
5 Glen Mill
6 Niagara Falls Mill
8 Curtis Mill
9 Webster Mill
10 Wisconsin Mill
11 Livermore Mill
12 Van Buren Mill
13 Montague Mill
14 Lake George Mill
16 Three Rivers Mill
17 Piercefield Mill
19 Seton Mill
20 Bastrop Mill
21 Gardiner Mill
22 Cadyville Mill
23 Riley Mill
24 Wilder Mill
29 Watertown Mill
30 Kipawa Mill
31 Hawkesbury Mill
32 Ticonderoga Mill
33 Merrion Mill

Hydro-Electric Developments

44 Feeder Dam
45 Cadyville
46 Kipawa
47 Pougan
48 Chelsea
49 Farmers
50 Grand Falls
51 Sherman Island
52 Snakeberg Storage
53 Manitouki Power Site
54 O'Brien Power Site

Lumber Plants

34 Calumet Saw Mill
35 Rockland Saw Mill
36 St. Maurice Saw Mill
37 Batiscan Saw Mill
38 Dalhousie Saw Mill
39 Douglastown Saw Mill
41 New Edinburgh Saw Mill
43 Hull Saw Mill

Coal Mine

42 Minto Coal Mine

New Port Arthur Mill of Consolidated Company

Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis., have made a number of improvements to existing mills and initiated several important developments during 1926. Early in the year work was started on a large newsprint mill at Port Arthur, Ont., where it is expected to be making paper about May 1. This mill is to be equipped with an unusually wide fourdrinier having a 245-inch face and another machine 234 inches wide. Pocket grinders are to be used in the groundwood mill, 14 of these being now in process of building. The sulphite plant will be equipped with two 15-ton digesters and the power plant will have three 1,000 h.p. steam boilers. Docking facilities are provided for the handling of all coal, limestone, sulphur and paper by boat.

Additions at Wisconsin Rapids Mill—During 1926, the Consolidated Water Power & Paper Company made an addition of a 12-ton digester and a new acid tower to its Wisconsin Rapids plant, thus doubling the production. A new power plant is now under construction, which when finished will consist of four 800 h.p. boilers, water economizers, air preheaters and underfeed stokers. The boilers will operate at 425 lbs. and 250° superheat. High-pressure steam will be used in a 5,000-kw. turbine and the pressure reduced to 125 lbs. for use in the digesters and 25-lb. pressure for use on the paper machines.

A water-filter plant is in the last stages of construction. This consists of a water-treating compartment, settling basin and sand filter, with a capacity of 1,000 gallons per minute.

At the Wisconsin Rapids mill, work has also been started on a sulphite pulp bleaching plant which will have a capacity of 30 tons a day.

A 10-inch pipe line extending from the Wisconsin Rapids mill to the Biron mill, a distance of four miles, was completed during the summer and is used for pumping slush sulphite pulp from Wisconsin Rapids to Biron.

Biron Mill Improvements—Improvements at the Biron plant include the rebuilding of a sea wall along the east side of the river which when completed will be 2,400 ft. long and 7 ft. high. An American filter was installed during the year for deckering groundwood pulp and for the saving of stock in the waste white water.

The Stevens Point mill of the Consolidated Water Power & Paper Company has been provided with an abundant supply of spring water for the manufacture of high-grade tissue papers through the construction of two wells and an 18-inch pipe line, two miles long.

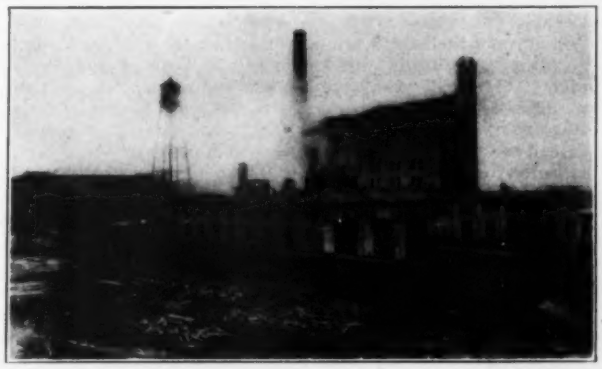
Gatineau Mill of Canadian International Paper Co.

Not far from the city of Ottawa and the confluence of the Ottawa and Gatineau rivers has been erected the second newsprint paper mill of the International Paper Company in Canada, the Three Rivers mill at Three Rivers, Quebec, being the initial undertaking of the company. The first unit of the Gatineau mill now nearing completion will contain four paper machines designed to produce a sheet 256 inches wide at the rate of 1200 ft. a minute, with a total capacity of 600 tons a day representing the largest single producers thus far installed in the world, and provision is made for an increase of capacity when conditions may warrant it. Like the Three Rivers mill, every application of power in the Gatineau mill will be electrical, power to be supplied from the hydroelectric plants which the company has built on the Gatineau river.

The equipment of the Gatineau mill, which is expected to start operations in a few weeks, include a wood slashing and wood barking plant, a groundwood pulp mill, a sulphite pulp mill, newsprint and wrapping paper machines, and accessory equipment. The buildings cover a large extent of surface, occupying an area of more than ten acres. Preparations for the operation of the mill have been proceeding quite actively for months past, pulpwood cut on the timberlands of the company, up the Gatineau river, having been already received for barking and piling, ready for use when the mill begins the manufacture of paper.

New York Times-Kimberly-Clark Mill at Kapuskasing

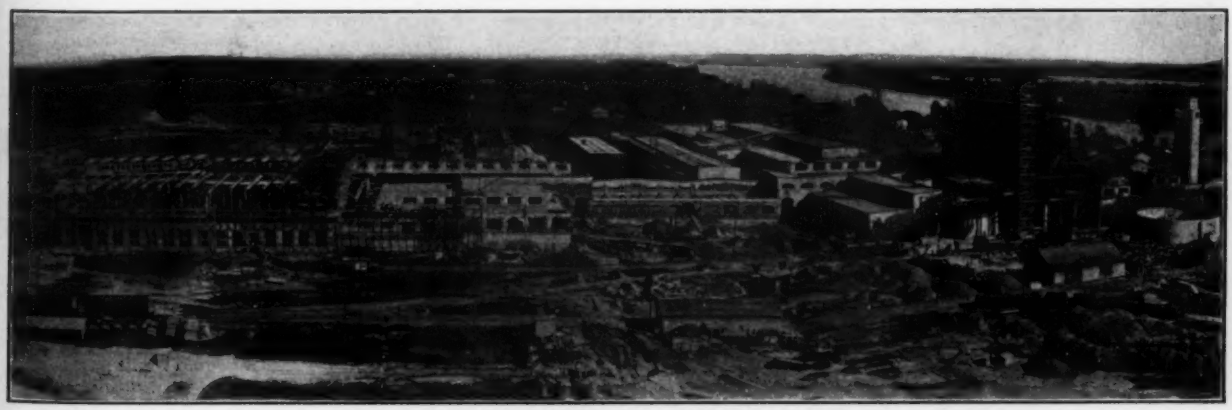
Spruce Falls Power and Paper Company, Ltd., Toronto, which is a combination of interests representing the Kimberly-Clark Company, of Neenah, Wis., and The New York Times, is developing a great pulp and paper mill at Kapuskasing,



Sulphite mill of Spruce Falls Power & Paper Co., Ltd., Kapuskasing, Ontario

Ont., in addition to a great hydroelectric project. The newsprint mill will be provided with four 234-inch fourdriniers built by the Dominion Engineering Works to provide a daily output of 550 tons of newsprint paper, but production will not be started probably until January, 1928, when existing paper contracts of The New York Times Company run out. The existing sulphite pulp mill at Kapuskasing is to be doubled in capacity with the addition of four digesters to the four installed in 1921, so as to produce in excess of 200 tons daily of sulphite pulp. Paulson's magnesia-lime acid system will be used.

The Kapuskasing mill will be operated from power devel-



The Progress of the Construction of the Gatineau Mill of International Paper Company

oped at Smoky Falls some sixty miles north of the mill site, where the dam is now approaching completion. The power plant is designed for 75,000 horsepower under a fall of 120 feet. No information is yet available concerning the construction of the groundwood mill, but it is understod that 4-pocket grinders will be installed.

New Mill at Pine Falls, Manitoba

At Pine Falls, Manitoba, 70 miles northeast of Winnipeg, a newsprint paper mill is in course of erection for the Manitoba Pulp & Paper Company, Ltd. The enterprise will entail an expenditure of upwards of $6,000,000. A sulphite pulp plant will be operated in connection with the paper mill which has been designed by George F. Hardy, consulting engineer, New York. The production of the sulphite mill will amount to 75 tons a day and the output of paper 250 tons, it being planned to install two 226-inch fourdriniers. C. C. Irvine is general manager of the company at Pine Falls, which is a subsidiary of the G. H. Mead Company.

New Soda Mill for Canada

Howard Smith Paper Mills, Ltd., Montreal, have organized the Canadian Cellulose Company, which is to operate a soda pulp mill at Cornwall, Ontario, beginning this month. Considerable enlargements to machinery, filter plant and pulpwood storage facilities have been made at the Cornwall plant to maintain an initial production of 50 tons of soda pulp daily. Among the new equipment, mention may be made of two 9½x14-ft. welded digesters with Morterud heaters, Oliver filters for washing the stock, a high consistency bleaching system and Kamyr feltless drying machines. In addition to multiple-effect evaporators and a continuous causticizing and lime recovery system, a Wagner furnace is to form part of the mill equipment.

Three Rivers Mill of Canadian International

With a capacity of 700 tons of newsprint paper a day, the Three Rivers Mill of Canadian International Paper Company, Three Rivers, P. Q., is the largest paper mill in the world. In August, 1922, paper production was started with four machines in operation, the plant being extended during 1925 and 1926 to accommodate four additional newsprint machines, making eight in all. Designed for normal operation at a rate of 1,200 ft. a minute, the new machines are capable of being driven at a speed of 1,440 ft. a minute. A novelty is the use of worm gears in driving them, but every application of power in this mill is electrical, it being one of the few all-electrical paper mills in the world.

The mill docks of the company front the main steamship channel between Montreal and Quebec, and as it is at this point that the St. Maurice river joins the St. Lawrence river, pulpwood supplies are floated down from the company's forests, the river water at the same time being used to furnish the power that operates the mill and supply the enormous quantities of fresh water that are necessary in the manufacture of paper.

Powell River Company Increases Production

Powell River Company, Ltd., Powell River, B. C., installed a new 234-inch Walmsley fourdrinier machine a short time ago and the production of newsprint at this mill has now been brought up to a daily average of 450 tons. The mill operates six machines in all; the first four were Pusey & Jones make and the latter two Walmsleys.

Great Newsprint Mill Now Operating

Port Alfred Pulp and Paper Corporation, Montreal, P. Q., has begun to operate its new four-machine newsprint mill at Port Alfred on the Saguenay river. The mill is of the most modern and improved design, intended for a daily production of 400 tons and it includes a sulphite mill capable of turning out 150 tons daily of high-grade easy-bleaching sulphite fiber, together with a groundwood mill equipped with twenty-two magazine grinders.

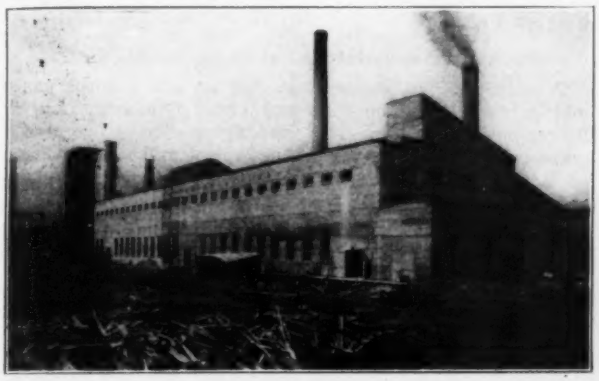
The paper mill building is of concrete, with structural steel floor and roof system designed by H. S. Taylor, consulting engineer, Montreal. The initial program called for the erection and operation of two 234-inch high-speed news machines, but shortly after construction was started the plans were extended to provide four machines of this great width and the first two are now in operation.

The sulphite mill contains five digesters 18 ft. in diameter by 54 ft. in height with a productive capacity of 225 tons. The raw stock coming from the digesters is blown into rectangular

Photo by Fairchild Aerial Surveys of Canada, Grand Mere, Quebec

Airplane view of Three Rivers Mill of International Paper Company

blowpits, where it gets its initial washing. The stock thus washed is pumped to a brown stock chest, and from there through the screening system for final conditioning. The news mill draws its supply of sulphite stock from the sulphite decker chest, and the remainder of the sulphite pulp is taken over drying machines, where it is cut in sheets and baled for shipment.

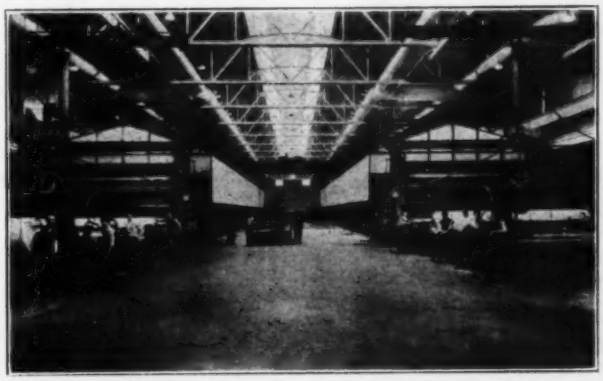


Magazine grinder room, Port Alfred Pulp & Paper Corporation, Port Alfred, Quebec

Mixing room end of mill, Port Alfred Pulp & Paper Corporation, Port Alfred, Quebec

The groundwood mill is equipped with twelve magazine grinders of Warren type and ten improved Continuous Wood Grinder Process Company's manufacture, the grinders being driven in pairs, one on each end of a motor shaft. After grinding, the pulp flows to a bull screen pit where large slivers are removed and from there it is slushed in a pipe line to the screen room in the news mill, where final screening and conditioning is done.

The paper machines are of Bagley & Sewall make, driven by a semi-electric drive. Each machine is equipped with Briner economizers and an asbestos gypsum insulated paper machine hood of H. S. Taylor standard design.



No. 1 and 2 machine room, Port Alfred Pulp & Paper Corporation, Port Alfred, Quebec

Power to operate the machine is transmitted by cone pulleys and belts from the variable line shaft and is distributed into each section of the machine through Cutler-Hammer push-button-operated magnetic clutches. Control of speed on the main driving motor is accomplished by voltage regulators, the whole control apparatus, including the driving motors, being supplied by the Canadian Westinghouse Company.

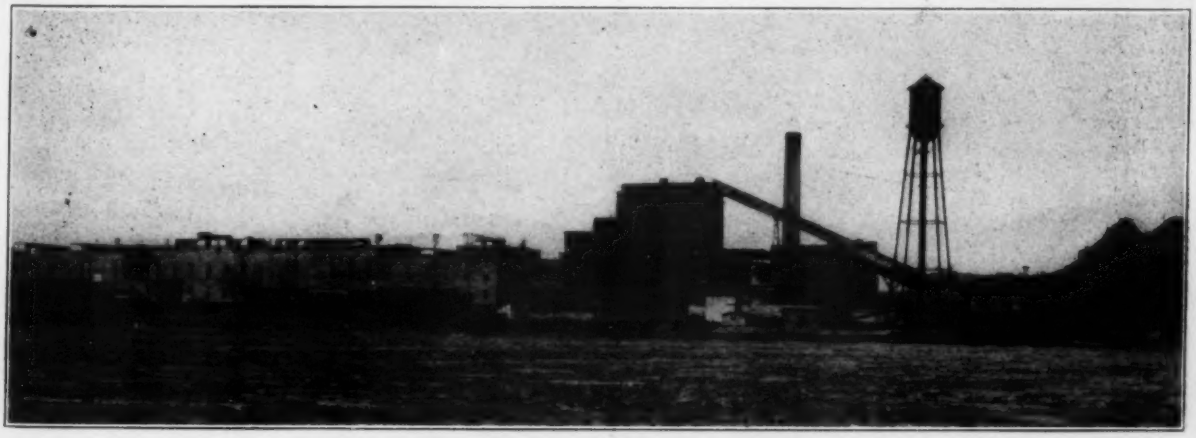
Each paper machine has a 75-ft. wire, Millspaugh suction couch roll, two straight presses, one reversing press and forty-four 5-ft. dryers. Steam supplied to the dryer section is controlled by the Honeco automatic temperature control system. Condensate is trapped and returned to an open type of feed-water heater located in the boiler house. A Bowser pressure lubricating system is attached to the machine.

The officers of the Port Alfred Pulp & Paper Corporation comprise George M. McKee, president; A. Cross, vice president; A. Wagner, secretary, and C. E. Thompson, assistant to the president.

The mill manager is C. E. Bergeron. The operating staff consists of F. L. Hogan, assistant mill manager; J. Krockenberg, paper-mill superintendent; R. Schadt, groundwood-mill superintendent; M. Matson, sulphite-mill superintendent, and M. Doye, chief engineer.

Developments at Provincial Mills, Port Arthur

Provincial Paper Mills, Ltd., Port Arthur, Ont., were installing in December a 165" Walmsley fourdrinier book ma-



Provincial Paper Mills, Ltd., Port Arthur, Ontario

chine with a speed variation of 150 to 800 ft. per minute to be driven by a Harland drive, fully automatic. This machine is said to embody all improvements made in recent years, and is designed to make all grades of paper from newsprint to high grade bond and writing. The capacity will be from 50 to 65 tons a day dependent upon the grade being made. The drive is installed in a separate building which was erected last summer. In the upper floor of the drive room are located Briner economizers, erected by the Ross Engineering Corporation to take care of the new machine as well as the old one.

A nine disk United filter is being installed in the machine room, this machine being arranged to take care of the white water from both paper machines.

Two additional Duplex cutters have been put in the finishing room, as well as an Armstrong Whitworth roll grinder.

Three Niagara type beaters have been set up in the new beater room.

Additions to the groundwood mill include the installation of six three-pocket grinders, set in tandem, and these, with the present equipment, will give a production of 100 tons of groundwood per day.

The woodroom has also been enlarged and one additional barking drum installed, together with conveyor equipment to handle the increased quantity of pulpwood.

Four Type E Combustion Engineering stokers have been put in the boiler house with induced draft equipment, which will handle the additional steam load.

Newsprint Mill Started at Thorold, Ont.

Beaver Wood Fibre Company, Ltd., Thorold, Ont., Canada, the Canadian subsidiary of The Beaver Products Company, Inc., whose executive offices are at Buffalo, N. Y., recently completed the construction of a 65-ton paper machine on which a high-grade newsprint stock is produced. Alterations and additions were made at the pulp and board plant in Thorold to accommodate the machine which was built by Pusey & Jones Company, Wilmington, Del. The fourdrinier is designed to run at speeds between 750 and 800 feet, the wire being 166 inches wide and 75 feet long. The machine is equipped with a Trimbey proportioning system and two Bird screens handle the stock before it reaches the headbox. The fourdrinier has three presses and is driven by a Terry steam turbine. The dryers, forty-eight in number, each of 72-inch diameter, are connected up with the drying systems of the Ross Engineering Corporation and the Farnsworth Manufacturing Company. The equipment includes a calender stack, one drum reel and a Pusey & Jones winder. The power plant is provided with seven 325 hp. Babcock and Wilcox boilers. The grinders and other machinery are driven by electric motors drawing power from the hydro-electric plants at Niagara Falls.

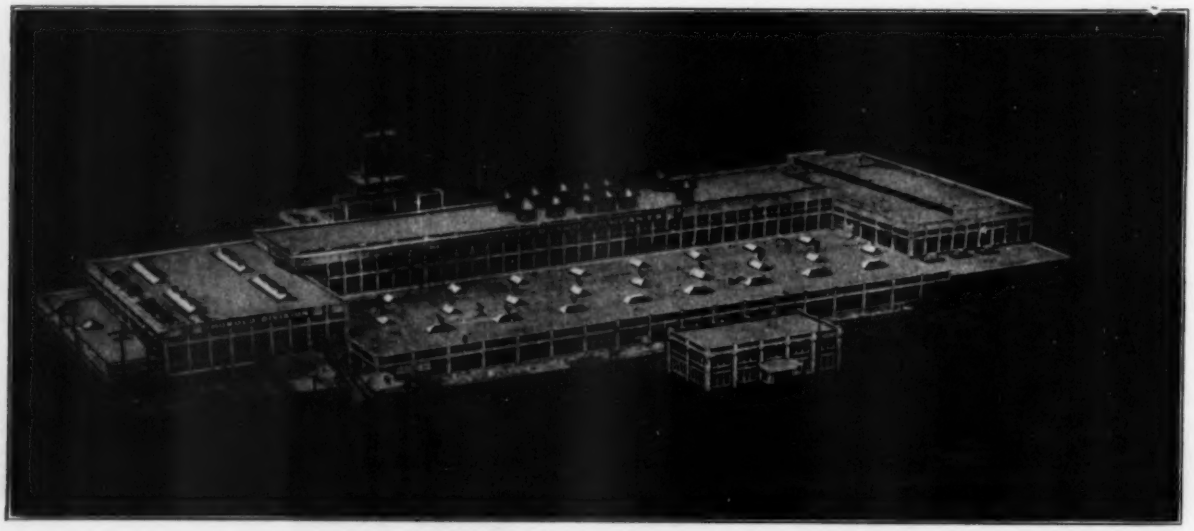
Brompton Newsprint Mill at Bromptonville, P. Q.

Construction was started last May on a newsprint paper mill for the Brompton Pulp and Paper Company, Ltd., at Bromptonville, Quebec. The company previously operated a groundwood mill there and the newsprint mill extends north of it. The machine room houses one 234-inch newsprint machine made by Charles Walmsley & Co., at Longueuil, P. Q., which is driven by a Harland sectional electric drive. A turbine of 1,400 hp. driving the direct-current generator for the sectional motors on the paper machine, also drives the vacuum and stock pump.

New mill buildings, Brompton Pulp & Paper Co., Ltd., Bromptonville, Quebec

The addition to the groundwood mill consists of a stock-preparing room, machine room and finishing room. The boiler house was also enlarged, an addition 98x64 ft. wide being built.

The stock-preparing room is equipped with twelve thickeners, 40 in. x 96 in. cylinder molds, which discharge directly into a groundwood tank below. Groundwood slush stock is delivered from the groundwood mill by gravity and white water returns to the white-water tank also by gravity. All sulphite pulp is delivered in laps and is shredded and passed through a Dilts continuous breaker beater discharging into a tank underneath. Sulphite pulp laps are stored in the basement.



General view of Beaver Wood Fibre Company's newsprint mill, Thorold, Ontario

Details of the paper-machine equipment include a Millspaugh suction couch roll and suction press, a Van de Carr slice and Sheehan rope carrier. The stock will pass through two mammoth jordans and four No. 2 Bird screens. The calender stack was supplied by the Farrell Foundry Company, the vapor absorption system by the Ross Engineering Company, of Canada, and the drip system on the dryers by the Farnsworth Company. The groundwood and sulphite stock lines are equipped with consistency regulators and the Trimbey proportioning and metering system is used. Before entering the machine chest, broke stock is controlled by a Trimbey consistency regulator. A 30-ton crane is operated throughout the entire length of the machine room.

The finishing and shipping rooms of the new mill are nine feet lower than the main floor of the machine room, and the paper will be taken down by an elevator. The mill and time offices, smoking room for men and storeroom are in the finishing room. The paper is to be loaded from the finishing room floor into cars which run into the shipping room, where there is enough space for six cars.

Pulverized coal is to be used as fuel in the power plant, the pulverizers being supplied by the Kennedy Van Saun Company. The brick setting is of the air-cooled type, one boiler being equipped with a Liptak arch, and the others with American Arch Company setting. The furnace hoppers were supplied by the Allen-Sherman-Hoff Company; Foster economizers are being installed.

The boiler house equipment of the Bromptonville mill consists of two 478 hp. Babcock & Wilcox boilers with superheaters and two 286 hp. B. & W. boilers also with superheaters.

The work of construction was carried on under the direct supervision of J. A. Bothwell, general manager, and C. R. McCort. Hardy S. Ferguson, of New York, was consulting and designing engineer.

Canadian and American Paper Manufacturers Confer on Problems of Common Interest

On Friday, December 10th, when committees representing the Canadian Pulp and Paper Association and the American Paper and Pulp Association sat down together for a luncheon at the Union League Club in New York, a significant movement was inaugurated looking to greater friendliness and a better understanding in an industry which is fundamental to the business life of the two great nations of the American continent.

For years the pulp and paper industry of Canada and the United States have profited by the interchange of men, technical and otherwise, materials and markets. There has been very friendly contact between the manufacturers of the two countries in years past but not until the meeting just held have representative groups from the association representing the two countries sat down together for discussion of common problems. The Canadian committee is made up of the following manufacturers:

L. R. Wilson, President, Canadian Pulp and Paper Association, V. P., Abitibi Power and Paper Co., Ltd., Montreal.
C. Howard Smith, Howard Paper Mills, Ltd., Montreal.
I. H. Weldon, Provincial Paper Mills, Ltd., Toronto.
P. B. Wilson, Spanish River Pulp and Paper Mills, Ltd., Sault St. Marie.
J. Leonard Apedaile, Price Bros. & Co., Ltd., Quebec.
F. G. Robinson, Riordon Sales Corp., Montreal.
K. S. Maclachlan, Lincoln Pulp & Paper Co., Merritton, Ont.
Ed. Beck, Sec., Canadian Pulp and Paper Association.

The following American Manufacturers compose the American Committee:

Norman W. Wilson, President, American Paper and Pulp Association, V. P., Hammermill Paper Co., Erie, Pa.
D. C. Everest, Marathon Paper Mills Co., Rothschild, Wis.
Hugh J. Chisholm, Oxford Paper Company, New York City.
David L. Luke, West Virginia Pulp and Paper Co., New York City.
C. A. Crocker, Crocker-McElwain Co., Holyoke, Mass.
Edgar Rickard, Pejepscot Paper Company, New York City.
Hugh P. Baker, American Paper and Pulp Association.

Mr. Norman W. Wilson, president of the American association, presided as chairman at the first meeting of the conference committee and outlined several questions which are common to the industry north and south of the line. Some of the more important problems as presented were, first:

Saving of Mill Waste

Mr. Wilson indicated that this constitutes a broad field of research and activity and felt that at the beginning this question should be confined to fibre losses in the pulp and paper mills and to the recovery of cooking liquor through the development of by-products. Discussion brought out the feeling that should satisfactory progress be made in the saving of mill waste, consideration should be given to other savings all along the line, from raw material used to the point of delivery of the finished product to the consumer.

With the question of saving mill waste, it was indicated that the prevention of stream pollution is closely allied. It was brought out that while this problem may not be of vital interest to Canadian manufacturers at the present time, it is a distinct problem in certain of the States.

The training of men in the mills was emphasized as an important common problem and a problem which has been given much thought and attention but which has as yet not been at all satisfactorily solved. Mr. K. S. Maclachlan spoke very interestingly on the work being carried out in some of the Canadian mills along vocational educational lines. The importance of this work was emphasized by Mr. L. R. Wilson and it was agreed that the problem could be worked out on a joint basis much more satisfactorily than by either industry alone or by the individual mills.

Another important question discussed was that of forestry, with particular consideration of such phases as forest protection, forest management, use of new and untried species of wood and other materials. Reference was made to the increasing use of hardwoods in the States and the use of new species in foreign countries. There was strong feeling evidenced that forestry problems are common to the two countries and that great good would come from exchange of ideas and opinions among the technical foresters, which should result in the speeding up of efforts on the part of individual executives and the industry as a whole.

Among other subjects discussed was the question of the exchange of statistics and related information, co-operation in technical research and in standardization and simplification. The importance of these last questions to the industry north and south of the line was emphasized by various members of the two committees and the belief was emphasized in the conference that excellent results would come from joint effort.

An interesting subject which was brought out at the conference was the matter of new uses of pulp and paper. The work of the American association, through a Committee on New Uses, was described and it was felt that both industries are facing keen competition, and at times surplus production, with the result that a large field for profit might be uncovered by speeding up the development of new uses.

The friendly discussion of the various problems which are common to both industries was of so much interest that the conference decided to begin work immediately upon two or three of the more vital problems and it was agreed that the conference should meet again soon to consider the results of investigations of the subjects under consideration by the two associations, separately and jointly, and for the consideration of other subjects. It was understood that the conference would meet alternately in the United States and Canada, and that the chairman of the conference would be the president of the association in the country in which the conference was held.

Wood Rosin Prices Reduced

The Hercules Powder Company has announced that, effective immediately, the prices on F wood rosin have been reduced 50 cents per 280 lbs., making the base price $10.00 per 280 lbs., gross, f. o. b. southern plants.

New construction work has been taking place at the Paper Roll Plug Company, of Menasha, Wis. A new factory is being built and a warehouse has just been completed.

New Features in Mechanical Design

Description of Some of the New Developments in Pulp and Paper Mill Equipment

Worm Gear Drive On High Speed News Machine

WORM gears have often been considered as an ideal method of driving dryers, their smooth action, silent operation and total enclosure making an almost irresistible appeal from the point of view of safety, accessibility, low maintenance and cleanliness. The chief reasons for their not having been adopted have been high cost and the suspicion with which a great many engineers look on worm drives of all kinds. Nowadays, however, they have pretty nearly lived down the bad reputation made by the badly designed and poorly lubricated specimens of a few years ago and the modern worm gear is a highly efficient and dependable part of a machine. Also with the increasing speed of the modern paper machine, the pitch line speed of the dryer gears is getting very near to the limit for unenclosed gears and the extra speed obtainable, together with the convenience on a wide machine of being able to clear broke from the dryers at the back, more than justifies the extra expenditure for worm gearing.

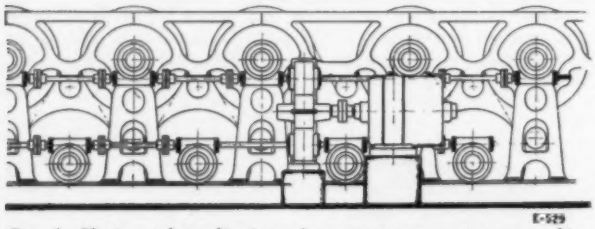


Fig. 1—Horizontal application of worm gears to paper machine dryers, designed by Dominion Engineering Works, Ltd.

About five years ago, The Dominion Engineering Works, Montreal, Canada, designed a worm gear application for two high speed news machines which they were building at that time. In this design, the worms were arranged horizontally above the worm gears on the lower dryers and below on the top dryers being connected together by short shafts and flexible couplings virtually forming two horizontal shafts the full length of the dryer section. The power was to be transmitted to these two shafts by a train of enclosed double helical steel gears from the sectional motors. This design is shown clearly in Figure 1. It was not proceeded with entirely, on account of lack of time for experiments and development.

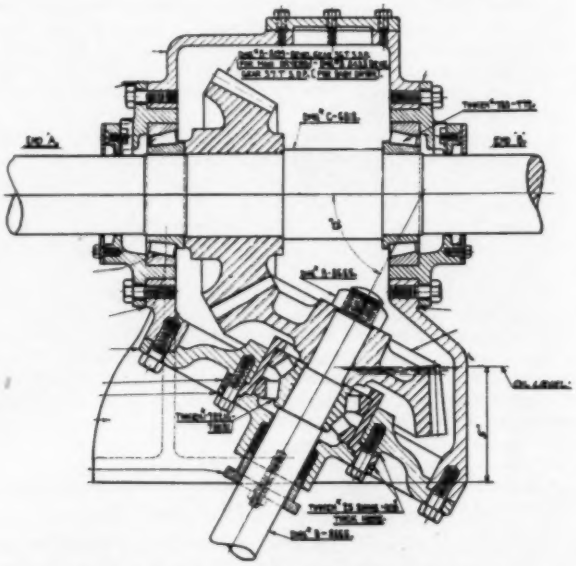


Fig. 4—Internal construction of bevel gear boxes

On the machines for the Canadian International Paper Company, Three Rivers, Quebec, however, it was desired to provide for the ventilating system designed and patented by Mr. A. H. White. This practically eliminated the possibility of using spur gears, and even the type of worm gear previously described did not provide sufficient opening, and an entirely novel design was developed, giving almost perfect freedom of access to the back of the machine. In such a design, illustrated in Figure 2, the dryers are driven in pairs by an angular shaft coupled to the worms by universal joints between the dryers which are driven in turn through an expansion type coupling by angular bevel gears from a shaft overhead or below, as required, into which the sectional motors are directly coupled. This design has several advantages apart from accessibility, viz., the end thrust of the worms is balanced as the two dryers rotate in opposite directions. The possibility of cumulative backlash in the flexible couplings in Figure 1 might cause oscillation of the first and last dryer. With direct coupled motors, no gears transmit more than the power required to drive two dryers and in the unlikely event of the failure of a worm or bevel gear, the form can be removed from one or both dryers, and the felt allowed to drive them tempo-

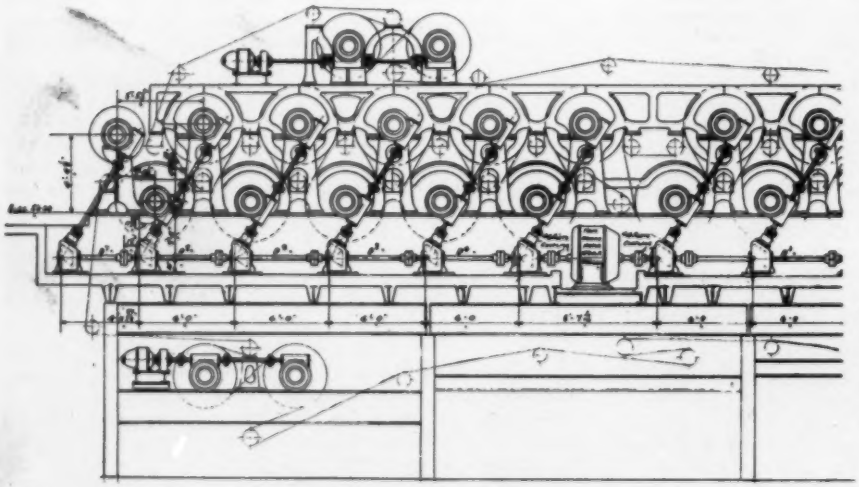


Fig. 2—Dryers driven in pairs by angular shafts coupled to worm gears by Universal joints between the dryers, driven in turn through expansion type couplings by angular bevel gears from shaft either overhead or below

rarily without affecting the other dryers.

In designing the worm and bevel gears, a very ample safety margin has been allowed, for although the power required for the dryer section amounts to less than 3 h.p. per dryer, this power is not by any means evenly distributed and any one dryer might easily require three or four times this amount due to uneven felt shrinkage or failure of the drainage system. In addition, it was necessary to use a very low unit bearing pressure on the worm gears owing to the thinning of the oil by the heat transmitted from the dryer journal.

Gears of a rated capacity of over 50 h.p. have therefore been provided, and gears that have been examined after six months' running have shown no signs of wear and have only had a small proportion of the tooth face polished. Probably the most important factor in the successful operation of worm gears is lubrication, and this has been taken care of by a gravity circulatory system, incorporating a cooler and filter so that a continual stream of cool filtered oil is projected in the tooth contact of the worm and worm-wheel. The dryer bearings are supplied with oil from the same system and all the leads are fitted with sight feed glasses and regulators.

All the bearings used are of the roller type, the bevel gear being mounted on Timken taper roller bearings and the worm gears on SKF parallel rollers with a heavy Timken locating bearing to take care of any unbalanced end thrust.

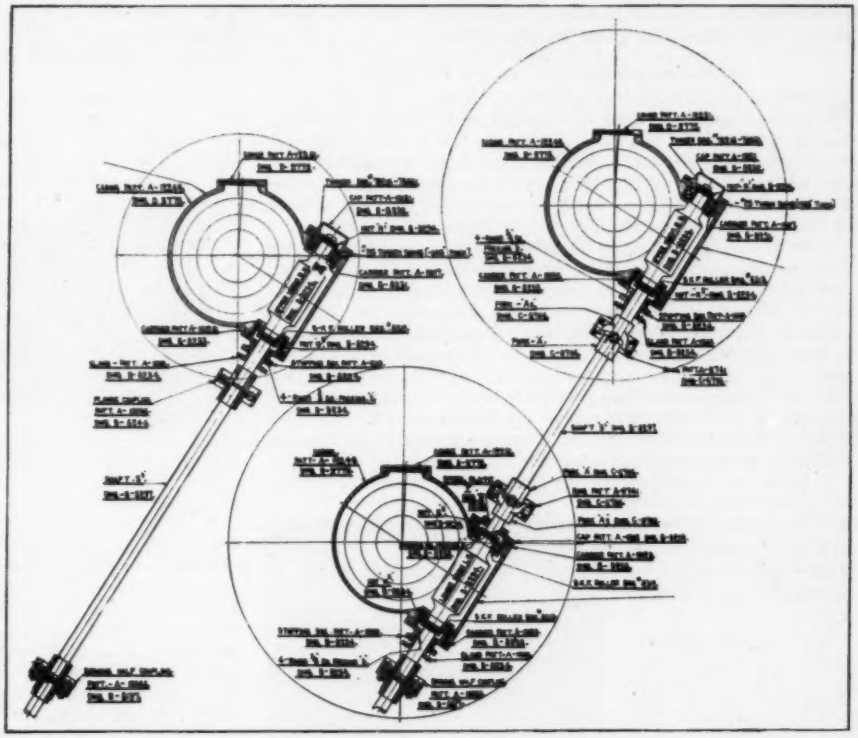


Fig. 3—Internal construction of worm gear boxes

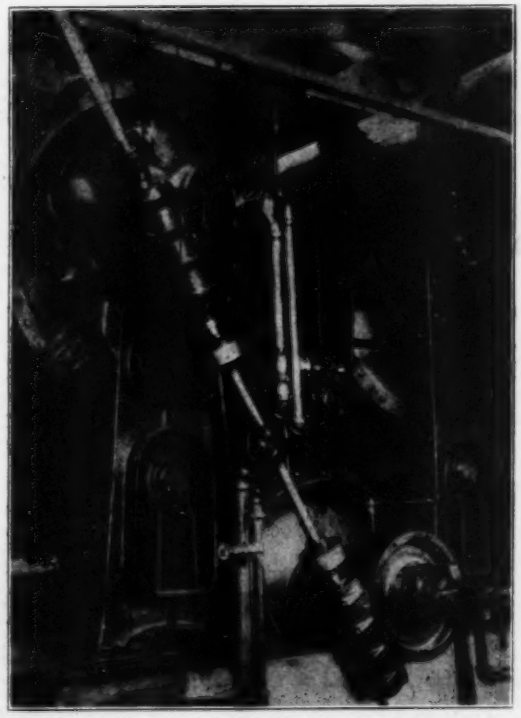


Fig. 5—Worm gears driving last three dryers on Dominion Engineering Works 166-inch fourdrinier in International Paper Co. mill, Three Rivers, Quebec

The bevel gears are enclosed in a cast-iron case and the pinion is mounted on a sleeve entirely independent of the longitudinal shaft, the power being transmitted to the sleeve by a specially designed feather which allows the expansion of the shaft without interfering with the mesh of the gears. Expansion is also taken care of on the angular shaft by having a locating bearing at one point only the remaining three bearings being of the parallel roller type which allows of free endwise movement.

The worm gears are of special composition, phosphor bronze chill cast with cast iron centers, and the worms are alloy steel, heat treated and ground. The worms have five threads and are fully reversible; that is, when the power is shut off the dryers, they will continue to run without damage to the gearing. The bevel gears are both steel, the pinion being a nickel alloy forging and the gear cast steel. Figures 3 and 4 show the internal construction of the worm and bevel gear boxes very clearly.

The drives are now running very successfully on all four machines at the Three Rivers mill—on No. 6 machine for seven months, and on No. 5 and 6 machines, paper has been made at over 1100 feet with a marked absence of noise and vibration from the dryer section.

It has generally been found unnecessary to shut down the dryer section to clear broke from the dryers, as this can be very easily blown or pushed to the back of the machine and drawn out while running. This makes a considerable saving in time and also keeps the front of the machine clear and there is no danger of pulling off the backtender ropes.

In addition to the four drives in the Three Rivers mill, the Dominion Engineering Works have orders for six more—four for the 270 in. machines for the I. P. Co.'s Gatineau mill and two for the new 160 in. machines for the St. Lawrence Paper Company. For the St. Lawrence machines, the driving shaft is placed on the floor below the dryers.

Figure 5 is a rear view of the last three dryers on No. 5 machine at Three Rivers, Quebec, and serves to show the extreme accessibility of the back of the machine. The angular

shafts are all enclosed in sheet steel casings and the latter picture was taken before this had been done.

A Water Supply Control System

SUPPLY of fresh water for mill purposes is one of the important considerations among the mills in the Fox River Valley. The better the grade of paper being made, the more careful the mill has to be from a standpoint of freedom from dirt and sand, and all the mills try to economize on the power for pumping the water as much as possible, so that the amount of fresh water used each hour is a distinct consideration.

One of the largest mills making a fine grade of paper has a recent installation in connection with its water supply that is of interest from a standpoint of design and up-to-date equipment. The complete plant includes screens for the removal of large particles of waste matter, a settling basin in which further deposits of foreign matter are made and a filter bed in which the last fine particles of matter undesirable in the process are removed. This plant is housed in well-constructed, brightly lighted and thoroughly ventilated rooms.

Most of the installation is of standard design of well-known makes of water purifying machines and equipment. There are two pieces of machinery in the installation which are worthy of special mention from a standpoint of originality of application in paper mill work and labor and money saving value.

The Venturi Meter

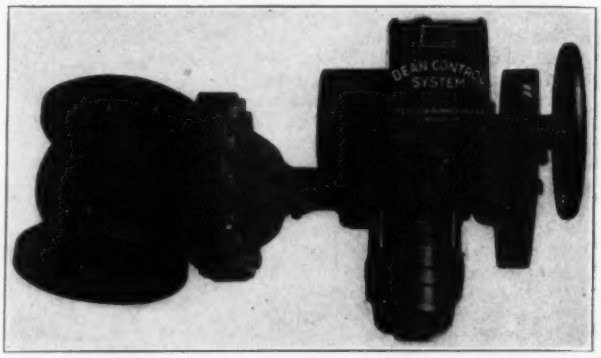
The Venturi Meter—One of these is a venturi meter manufactured by the Simplex Valve and Meter Company, of Philadelphia, Pa. Every gallon of water taken into the mill through this purifying installation is measured by this meter. The meter has three forms of measurement. First, it shows by a pointer and scale the rate in thousands of gallons per hour at which water is being consumed at any particular moment. Second, it shows a total consumption in thousands of gallons since the installation of the meter. Readings taken at the same hour every day and referred to the previous day's figures show the total consumption for the period. This is just like determining the rate of consumption of electricity or gas. The third measuring device records on a chart the rate of flow at any moment throughout the twenty-four hours and shows exactly when and for how long heavy drains occurred.

Knowing the amount of water used throughout the period of twenty-four hours is desirable, that mill consumptions from one day and in different parts of the year may be compared. This venturi meter goes further than this. It shows the mill engineer exactly at what times of day and for what periods the heavy drains occurred and anything out of the routine may be noted and checked up. Washing the filters, for instance, throws a heavy drain on the water system, but any extension of the time taken to do this job or any failure to do it on time with subsequent detriment to the operation of the system may be noted when the engineer checks the chart as it is brought to him.

The venturi meter is an aid to the man who is in constant charge of the working of the purifying system. One day he noticed from the chart that the system was not drawing anywhere near the amount of water that was normal. After checking up hurriedly on various conditions, the man realized that an inadequate supply of water was coming from the racks where the mill intake is located. A prompt report to the engineer in charge occurred and it was found that the intake was badly blocked and that the work was started on it just in time.

It is all the old story of the advantage of knowing exactly what goes on as an aid in checking inefficiency, dangerous conditions and leaks. The chief engineer of this plant says that money could not buy this instrument were it impossible to replace it.

Electric Automatic Valve—The other piece of equipment is



8-inch high pressure valve with Dean Control

an electrically operated valve which automatically maintains the level in the settling basin connected with the purifying system. The efficient operation of the filter beds depends on the maintenance of this level, but there is no labor cost for seeing that this is right at all times. In the settling basin is a float. When the level of the water goes below a certain point, the electrically operated valve slowly opens and lets in water until the raise in level of the water acts through the float and control to close the valve. This equipment is the Dean control system and is manufactured and marketed by the Cutler-Hammer Company of Milwaukee, Wis. The advantage of this absolutely automatic device can hardly be over-stated and other paper mill people who spend money for men to open valves and close valves—involving running long distances up and down stairs—would do well to consider the use of remote electrical control of valves—easily made automatic where the conditions warrant.

The hook-up between this electrically controlled valve and the meter is perfect. The valve operates, hour in and hour out, without the help of any man. A glance at the chart on the meter at intervals during the twenty-four hours will reveal any tendency on the part of the valve to fail in its duty. There are no men visible in the building where this installation is located.

Black-Clawson Improvements in Fourdrinier

THE new 172-inch fourdrinier paper machine, built by The Black-Clawson Co., which has been installed in the plant of the Champion Coated Paper Co., Hamilton, Ohio, has some improvements which make the machine one of the most advanced of the age.

The fourdrinier part is built with a stationary rail all through so that the table rolls are held rigid. The shake is applied to the breast roll only. This feature is patented and presents an entirely new angle. In speaking about this new principle of a shake, a prominent paper mill superintendent remarked, "Why is it that we have all been shaking our fourdrinier part from one end to the other when it was only necessary a few feet from the breast roll?"

Between the breast roll and the first table roll, there is a formation table which is also a Kutter patent. This board is designed to remove the excess water gradually and also to give a support to the wire at this particular point.

The Wentz "No-Deckle" device is, of course, in evidence in place of the old style deckle straps. This new device, in use but a few months, has already proven to be a tremendous success.

The table roll bearings are arranged so that several rolls are carried in one section and on roller bearings in such a manner that the movement of one roll is transmitted to the other rolls in the same section. This arrangement not only provides an easier way of leveling the rolls and keeping them in position, but absolutely prevents the possibility of one roll standing still because of mis-alignment.

The Devine oscillator is used for moving the wire continuously on the suction boxes, but the drive has been modified in such a way that the roll is oscillated by means of a double worm under its own power.

The entire fourdrinier part is removable. For this purpose, it is divided into three sections; the table roll section, the suction box section and the couch roll. These sections are removed to the front side of the machine by means of a hand ratchet that can be operated by one man and on tracks that are built into the machine room floor. Cantilever bars used for supporting the back side of the fourdrinier while it is being removed, then roll out on the rear side by means of cranks.

The simplicity of this operation is very marked. There is no heavy lifting, no movement of angle irons, supporting stands, etc. The entire operation is handled by ratchets and hand wheels.

The wire is hung by a looper which is in a fixed position and does not have to be removed while the machine is operating.

Electrical Engineering in Paper Mills

SOME of the engineering achievements of the Westinghouse Electric & Manufacturing Company for the year 1926 in relation to paper mill work are noted in a compilation by H. W. Cope, assistant director of engineering of the company. It is remarked in an opening paragraph that if steel is the barometer of industrial progress, paper is the gauge of increasing literacy. Mention is then made of the operation of sectional drives in paper millwork, it being noted that two of the largest book machines with sectional drives in this country went into successful operation in 1926; a 200 in. machine for Crocker, Burbank & Company, and a 196 in. machine in the Johnsonburg plant of the New York and Pennsylvania Company. The only larger book machine in this country is a 210 in. with Westinghouse single motor drive, at the Covington plant of the West Virginia Pulp and Paper Company.

In reference to the 196 in. machine at the New York and Pennsylvania mill, this is said to embody a great advance in the use of steam-air ejectors to supply the vacuum needed to draw off surplus water at the fourdinier suction boxes and the suction couch rolls. These ejectors, without moving parts, replace a number of vacuum pumps, each driven by a motor.

An interesting note is provided concerning the control of speed in rolling paper on the final reel as it comes off the machine. With the paper running at constant speed, this last reel must run slower and slower as the reel fills with paper, and its effective diameter increases. This change of reel speed had hitherto been obtained rather crudely by slipping a belt; a method only approximate, and requiring constant adjustment by hand.

A novel automatic control of the reel is now available, which by entirely electrical means keeps the speed of the reel and its driving motor adjusted for constant tension in the paper. It is based upon a constant armature current.

As examples of newsprint machines running at very high speeds, the four 800 hp., 234 in. machines of the Port Alfred Pulp and Paper Company, which allow a maximum of 1200 ft. per minute, are instanced. These are not only the highest speed, but the widest, of any single-motor-driven equipments. Less than two weeks after starting, one of these machines was producing 100 tons of paper in 24 hours.

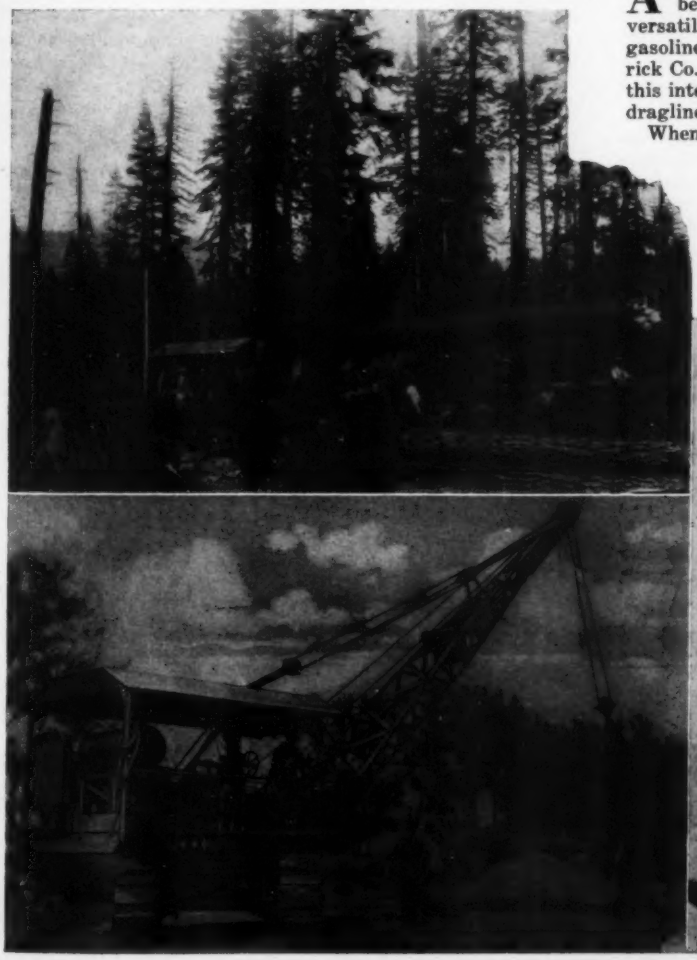
A General Utility Crane

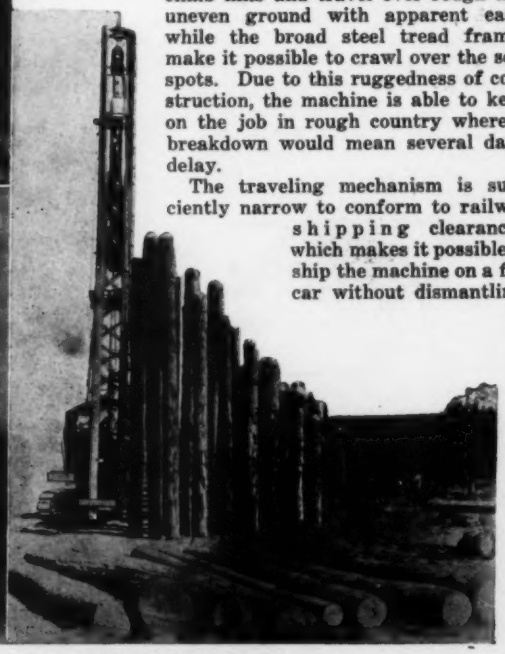
A MACHINE which has won the favor of loggers and lumber companies through its remarkable combination of versatility and ruggedness, is known as the American Model K gasoline shovel, manufactured by the American Hoist & Derrick Co., St. Paul, Minn. The accompanying illustration shows this interesting piece of equipment being used as a pile driver, dragline excavator and general purpose crane.

When the Model K has completed one kind of a job, it can swing to an entirely different type of work, with only a few minutes time necessary to change the boom.

The American Model K mounted on continuous chain treads, which is the applied name for the "American" crawler type of traveling mechanism, is able to penetrate the roughest country. It can climb hills and travel over rough and uneven ground with apparent ease, while the broad steel tread frames make it possible to crawl over the soft spots. Due to this ruggedness of construction, the machine is able to keep on the job in rough country where a breakdown would mean several days' delay.

The traveling mechanism is sufficiently narrow to conform to railway shipping clearances, which makes it possible to ship the machine on a flat car without dismantling.





Illustrations of three uses of American Hoist & Derrick Co. Model K Gasoline Shovel

Improved Electric Flow Meter

WITH the great advancement which has taken place in engineering practice, realization of the importance of making systematic and accurate measurements of the conditions and quantities involved has grown rapidly. At the same time, the desirability of locating the meters at points of greatest convenience to the users is more keenly appreciated today than ever before.

An example of this trend is supplied by the popularity of flow meters of the electrically operated type by the use of which an indicator may be located in clear view of the boiler fireman as a guide in firing, with the recorder and integrator placed at a convenient point among a group of recording instruments.

Also, from another point of view, electrical operation is especially advantageous for flow meters, since it affords a means of producing external indications and records of conditions existing inside of a high pressure steam or water pipe, without transmission of mechanical motion—as for instance, by means of a rotating shaft, passing through a pressure-tight packing gland, which of course would be essential and would necessarily cause serious friction losses.

Naturally, however, when electrical means are introduced to avoid the objectionable features of a mechanically-operated instrument, other undesirable features are likely to be introduced unless careful planning is applied to all phases of the question.

Because of these considerations, the new Brown electrically operated flow meter deserves the special attention of all engineers interested in flow measurement, since by a novel, but thoroughly practical utilization of a well-known electrical principle, the design of the Brown Electric Flow Meter at one stroke avoids all electrical as well as mechanical difficulties previously encountered in flow meters.

Among the characteristics of this new line of instruments are the following notable features:

1—The readings of the instrument are fundamentally independent of the value of the voltage impressed upon the electrical system. The instrument reads correctly, while operating on varying line voltages without the use of either voltage regulators or compensators.

2—The electrical circuits at the manometer, indicator and recorder consist simply of stationary, divided, inductance coils. These have only three connections which are permanently made at the time of installation. There are no make-and-break contacts, such as contacts dipping into mercury within the pressure chamber, voltage regulator contacts or similar devices.

3—In the manometer, or meter body, all electrical windings and connections are entirely external to the pressure chamber.

4—The integrator is a mechanical device operated by the electric clock which drives the charts. An equal amount of power is available for operating the integrator at all rates of flow, making possible the use of the most easily-read type of 5-figure counter for the integrator.

5—A pen operated by the action of the integrator mechanism makes a record at the outer edge of the chart each time the integrator mechanism increases the counter reading by one unit. Each tenth mark is distinguishable from the intermediate marks in order to facilitate counting when it is desirable to determine the total flow for a day, or during any hours of the day, without having to watch the counter.

6—The entire integrator mechanism with its individual recording pen is so simple and compact that it can be mounted in the standard recorder case along with the recording mechanism, thus avoiding the necessity of a separate integrator case.

Principle of Operation

As shown in Fig. 1, manometer (A) operates in response to differential pressure caused by flow of the fluid through an orifice (B). When the rate of flow increases, mercury is depressed in chamber (A_1) and rises in chamber (A_2), the difference in mercury level in the two chambers being a measure of the rate of fluid flow through the orifice in accordance with well-known principles. When the flow increases from zero to a maximum value, a float which rides on the mercury surface in chamber (A_1) is lowered from the position indicated by dotted lines to a lower position as indicated by the solid lines. The float is made of non-corrosive metal and chamber (A_1) has a moulded bakelite lining, ribbed on the inside, insuring freedom of action at all times. An armature (C) of transformer iron is supported by the float on a non-magnetic rod (D) and the armature is raised and lowered in accordance with the motion of the float.

This armature travels inside of a rust-proof, non-magnetic tube which has high electrical resistance and great mechanical strength. The pressure of the fluid being metered is confined within this tube and the electrical inductive winding (EE_1) which is slipped over the outside of the tube has excellent magnetic linkage with the armature which moves inside. At the same time, the coil is under atmospheric conditions only and is protected by a cover (F).

The outer ends of the divided winding (EE_1) are connected directly across the service mains of an alternating current supply line and connections are run from these ends directly to the outer ends of a similar divided inductance coil (FF_1) which operates an indicator (H) and also to divided inductance coil (GG_1) operating a recording instrument (1). Armatures are hung on counterbalanced arms (J) and (K) in the two instruments. The points of connection between the two parts of divided coils (EE_1), (FF_1), and (GG_1) are all connected together by a neutral wire (P) and when thus connected the

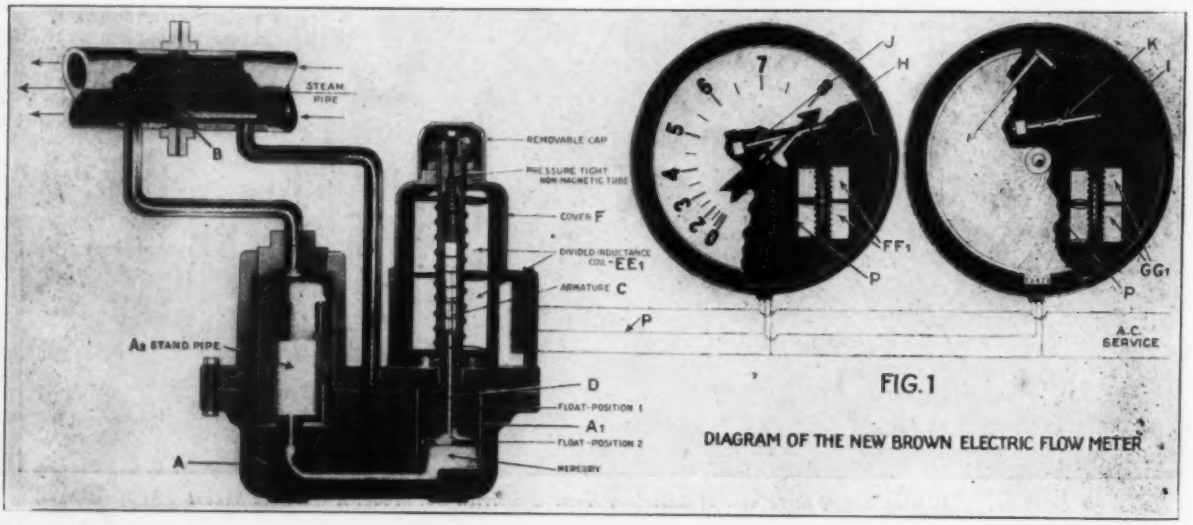
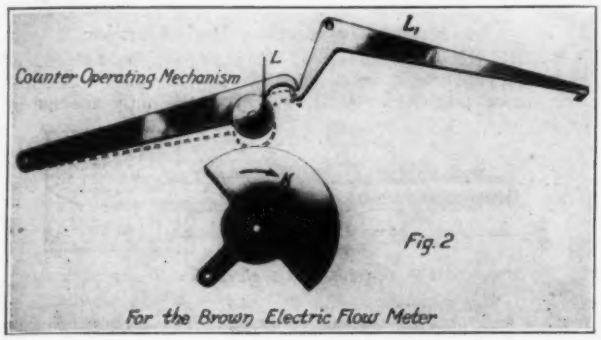


FIG. 1

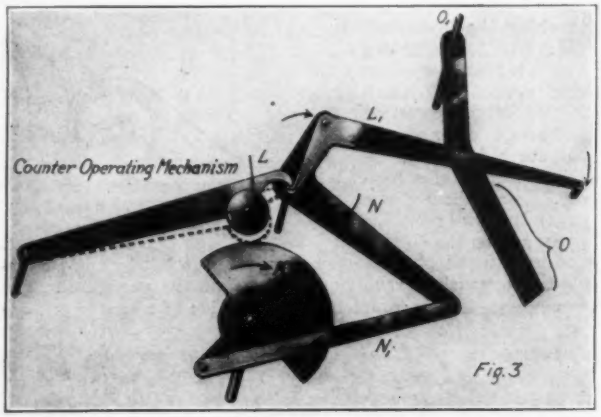
DIAGRAM OF THE NEW BROWN ELECTRIC FLOW METER

coils form the self adjusting inductance bridge which is the outstanding basic feature of this flow meter.

When the armature in the manometer is raised or lowered by a change in fluid flow, the relation between the voltages across the two parts (E) and (E_1) of the winding will be



changed. This causes the currents in the two parts (FF_1) of the indicator coil, and also the currents in the two parts (GG_1) of the recorder coil, to become unequal, as a result the armatures of the indicator and recorder move to new positions



Mechanism reproducing square-root law in Brown Electric Flow Meter

corresponding to the position of the armature (C) and the meter readings are adjusted accordingly by means of the gearing or linkage shown.

More briefly, the operation of the inductance bridge may be summarized by saying that the armature of the instruments move in accordance with the motion of the manometer armature as the latter is moved up and down by the mercury float. Since the positions assumed are such that the relative voltages across the two parts of each coil are the same, the operation of the instrument is independent of the actual value of the line voltage. No current flows in the neutral wire and the currents in the two halves of each divided coil are equal except when the armatures are being moved.

The Integrator

In order to make use of the simple inductance bridge method of operation, a special type of integrator was developed which increases the counter readings in proportion to the square root of the angular deflection of the recorder pen arm, this being the relation of flow to the pressure difference across the orifice. Attached to the gear train which drives the recorder chart is a sector of a disc (K), Fig. 2, which rotates at a constant rate. A roller (L) is normally held up by latch (L_1), out of contact with the sector. The latch is tripped when the sector is in different positions, depending upon the rate of flow, and the roller is rotated through an angle proportional to the rate of flow before the sector passes out of contact with it. After the sector passes beyond the roller, the latter is again latched up by (L_1) and the process repeated at regular intervals.

The square root relation existing between rate of flow and pressure difference (the latter being translated into recorder pen travel) is reproduced in the relation between angular travel of disc (L) and pen deflection by means of the oscillating latch carrier (N) being driven by the rotating sector (K), through a link (N_1) shown in Fig. 3.

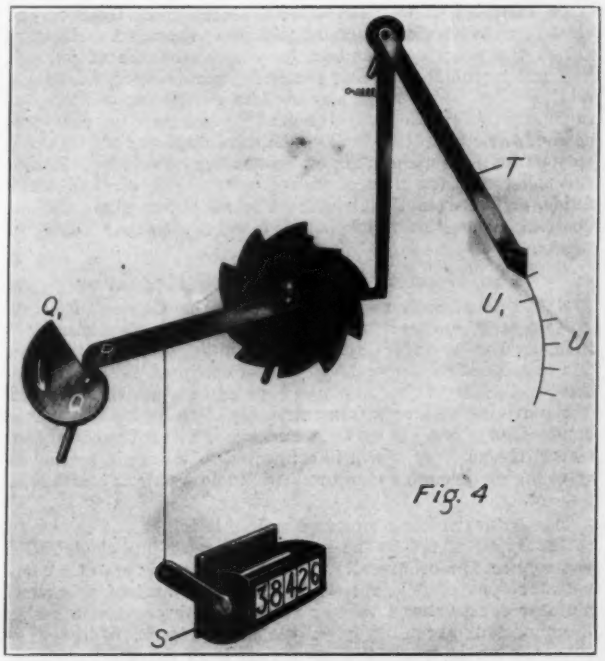
Tripping blade (O) which is attached to the recording pen shaft (O_1) releases the latch at the proper point, according to the reading of the instrument, the motion of the pen never being restricted by the tripping operation.

The angular relation between the uniform rotation of sector (K) and the rocking motion of arm (N) is an almost exact reproduction of the square root law through a large portion of the downward motion of arm (N) and a slight departure from the exact relation desired is taken care of by the shape of tripping blade (O). A roller on the end of arm (N) passes across tripping blade (O), which is very thin, and holds (O) fast against a plate while latch (L_1) is being tripped.

Two important features of this design are: first, the parts are simple and can be made accurately under practical manufacturing conditions so that the square root relation is always reproduced correctly by the mechanism; and, second, such a simple integrating mechanism which reproduces the square root relation permits the employment of the inductance bridge method of transmitting the meter readings.

When roller (L) has turned through a definite number of revolutions, a pawl is released which thereupon engages with a toothed pinion of the chart-driving gear train. This causes a cam (Q) Fig. 4, to make one complete revolution after the pawl is released and the cam then remains at rest until the roller again completes the proper number of revolutions.

As the cam (Q) advances, a cam arm (R) is gradually raised, lifting the arm of ratchet counter (S) until the high point (Q_1) of the cam passes, then the cam arm falls quickly



Counter and recording planimeter for the Brown Electric Flow Meter

and advances the reading of the counter by one unit without allowing the figures to pause in a half-way position difficult to read.

Each time the cam arm falls, the recording planimeter pen (T) makes a jog (U) in its record line, every tenth jog (U_1) being in the opposite direction to facilitate counting when de-

sired. The five-figure integrator dial (S) can be read at any given hour or hours of the day, and records made on the chart or elsewhere if desired; but the record of the recording plainimeter can take the place of these counter readings and affords the added advantage of making a record from which the total flow can be read off for any desired fraction of a day at any subsequent time which may be convenient—eliminating the necessity of having an observer on hand at the proper hours to note the readings of the counter as they occur.

A series of printed charts are chosen with a fixed ratio between successive ranges. The manometers also are arranged to be adjusted for several appropriate ranges. This simplifies the choice of an orifice plate, the size of which depends chiefly upon the density of the fluid and the pipe size. With such an orifice, the apparatus is easily adjusted for successive chart ranges by using a stand-pipe of proper size in the manometer. This is useful where the average load changes from time to time, for then the apparatus can be readjusted by changing the manometer stand-pipe—instead of changing the orifice plate which is much less convenient.

The various manometers for use with steam, operate on successive maximum pressure differentials increasing by intervals of about 60 per cent, ranging from 1.6 inches to 16 inches of mercury. There are six ranges in this series, the choice of a suitable manometer depending upon velocities encountered. Any manometer of the series, however, may be converted into the most sensitive one by simply opening a valve. This adapts the meter for use with one of the lower range charts, making it easily convertible for low load periods, which will be a distinct advantage in many types of service.

Where the apparatus must work on very low pressure differentials, an especially sensitive type of manometer is provided, the most sensitive of which gives full deflection of the meter on a pressure difference of ½" of water, although the operating force of the meter mechanisms of this high-sensitivity series is as great as that of the high-range manometers.

The simple inductance bridge principle upon which all of these instruments operate, their freedom from troubles obviated by electrical connections that are permanent and external to the pressure chamber, their independence of voltage fluctuation, their automatic recording planimeters, the adaptability with which their manometers handle various ranges, their easy reading 5-figure integrating counters, the compactness of their operating units—the advantages of all of these various features make this new flow meter especially desirable for measuring the flow of steam, water, gas, air and other fluids, and of exceptional interest to all power plant and industrial engineers and officials concerned with such measurements.

The General Electric Speed Regulator

IN the fourteenth annual review of the General Electric Company, entitled "Some Developments in the Electrical Industry During 1926," by John Liston, appears a description of a new speed regulator developed for sectional paper machine drives which is of the regulator type and maintains the speed of the driving motors within extremely close limits, i. e., a few hundredths of one per cent. It consists of a small synchronous motor, the rotor of which is connected to the main sectional-drive motor through a chain reduction and a pair of small cone pulleys.

The stator, which is mounted on ball bearings and is free to rotate, is connected to the master generator bus electrically, and connected mechanically to the brush mechanism of a commutator type of field rheostat. The upper half of this commutator constitutes a vernier rheostat with one brush which is connected mechanically to the stator frame of the synchronous motor, while the lower half is of coarser resistance sections and carries a brush mounted on a yoked arm which is actuated by the vernier brush stud only when the vernier has covered its complete range in either direction.

In principle, this regulator operates on an angular displacement between the stator and rotor of the synchronous motor corresponding to about one-quarter of a mechanical degree of displacement on the machine rolls. It operates on the field of the sectional-drive motors to maintain speed, but remains stationary except when load changes demand a field adjustment.

Unit switchboard control with full-automatic push button equipment for both motors and generating unit and the motor-operated "draw" adjustment, was applied to these sectional drives. A motor-operated generator-field rheostat and voltage-regulator rheostat was combined in a single unit, operated from the same rheostat arm and controlled from a single point.

The Automatic Suction Web Carrier

MECHANICAL handling of the paper on the wet end of the paper machine is necessary on the high-speed and wide news machines. Until recently, the only means of

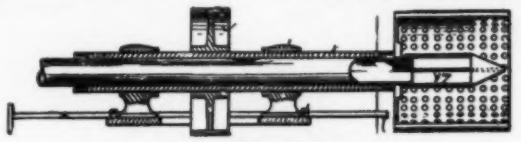


Fig. 1—Sketch of perforated roll

mechanically taking the paper through the presses was by means of air. The invention of the automatic web carrier by Sheahan and McNamara, is a decided improvement over previous methods of transferring the sheet from each wet press to the succeeding one and is the only equipment that works successfully on a reverse third press.

This new equipment consists of a perforated roll (Fig. 1), located close to but not touching the press roll (Fig. 2). Inside of this roll is a stationary suction nozzle. When a break occurs, the suction is turned on and the roll started to rotate by the operation of a handle. The ribbon of wet paper is drawn from the press roll by the suction and is instantly thrown down onto the wet felt by the perforated roll, which is revolving faster than the press roll. The whole operation is completed in a fraction of a second and accurate. In fact, it is so simple that an inexperienced worker can put the sheet over the presses as well as an experienced man. At the third press the web is automatically thrown into the rope carrier and goes down the dryer section. Fig. 3 shows the web carrier set up into operating position.

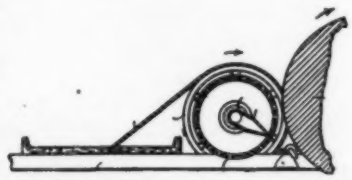


Fig. 2—Perforated roll and press roll

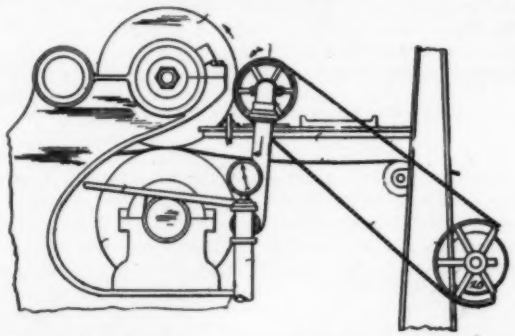


Fig. 3—Side elevation of press and automatic web carrier

Lloyd Murphy Junk Remover

WHAT is considered to be one of the greatest improvements in the board making process is a new machine for removing junk from paper stock, known as the Lloyd Murphy Junk Remover, manufactured by the Griley-Unkle Engineering Co., of Fort Wayne, Indiana.

Mr. Murphy is the well known superintendent of the Franklin Board & Paper Co., Franklin, Ohio, and it is generally conceded that he has gone a long way toward solving the problem of removing the junk that is collected in any beater in which old paper stock is furnished. The system is easily installed

and is a positive means of accomplishing the purpose for which it is intended.

The operation of the machine, described in the accompanying illustration, is as follows:

Junk, carried along with the pulp in the bottom of beater tub, falls through opening (A) into the pit and with gate (B) in raised position is caught in the conveyor buckets and carried up over sprockets (C) where it empties into box (D). Box (D) is cleaned through cleanout door (E) as required. Water, entering the box through the 4-inch valve (F) and perforated plate (G), flushes the pulp which might be carried into the box with junk, through opening (H) into chute (I) through which it is returned to pit (J) or to beater tub through chute (K). The pressure of the water also serves to float the pulp past opening (A). Valve (L) is used to flush contents of box into sewer for cleaning out purposes. Valve (M) is used for draining water from box before removing junk. Motor (N) is of the reversible type so that any jamming of the conveyor can be relieved by backing the conveyor.

New Method of Coloring Paper

THE Unkle patented method of coloring paper is a system which is built and sold by the Griley Unkle Engineering Co., Fort Wayne, Ind., and is attracting an unusual amount of interest among paper makers.

The advantages of this system, a diagram of which is shown in the accompanying illustration, are that the usual beater, jordan and chest washups are done away with, due to the fact that the color and alum are applied just as the stock is going to the screens.

The time lost in paper mills between colors caused by washups is always a problem to be reckoned with. In some mills this is more of an item than in others. By the use of the Unkle system, a color can be stopped quickly and a new one started immediately after without breaking the paper down on the machine.

In this system, the color is applied in the head box of the paper machine and can be used on both cylinder and fourdrinier machines. The color is mixed in lead lined tanks and pumped continuously to the machine. The quantity of color desired is controlled by a valve at the head box.

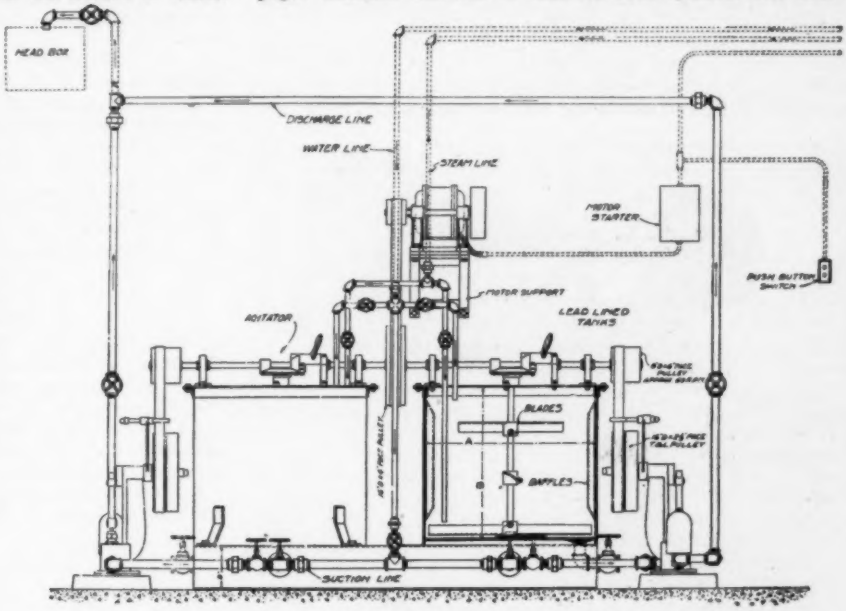


Diagram of the Unkle Method of Coloring Paper

THE numerous points of contact in the ordinary Christmas-tree tinsel are said by one mill superintendent to make this material of superior value for taking static electricity out of the sheet of paper. The tinsel is used in exactly the same way as the usual copper wire, but greatly increased conductivity, and is also much cheaper.

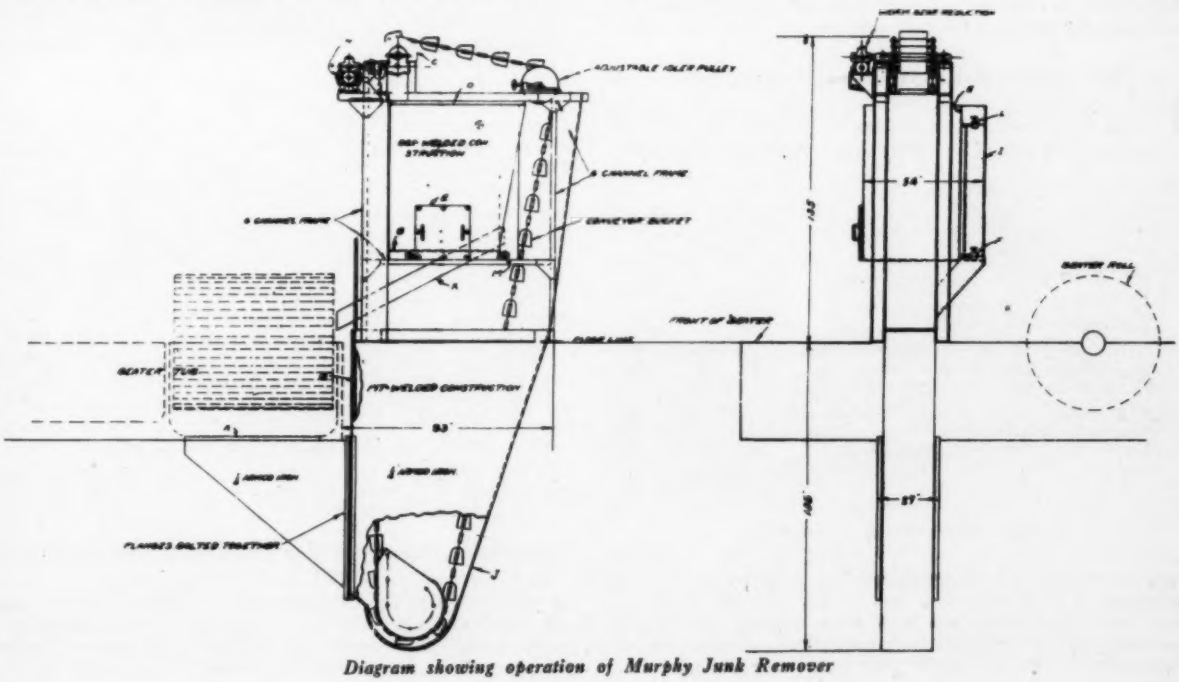
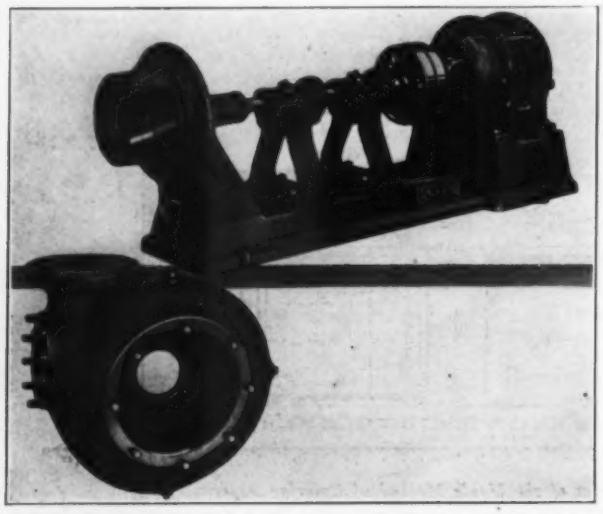


Diagram showing operation of Murphy Junk Remover

A New Non-Clogging Pump

THE American Well Works, of Aurora, Ill., has just placed on the market their non-clogging centrifugal pump. The design of this pump marks a new departure in construction and obviates the necessity of screens and their expensive maintenance.

The single blade impeller in the pump is so designed that the stream lines are not separated, but so the stream of fluid is kept in one mass and carried through the pump without being subdivided. By compelling all the liquid and debris to be discharged through a single peripheral passage, there is avoided the possibility of different portions of a single piece of debris being swept into different outlet passages and thereby being hung up within the impeller. This precludes screening sewage or fluid containing other material before pumping.



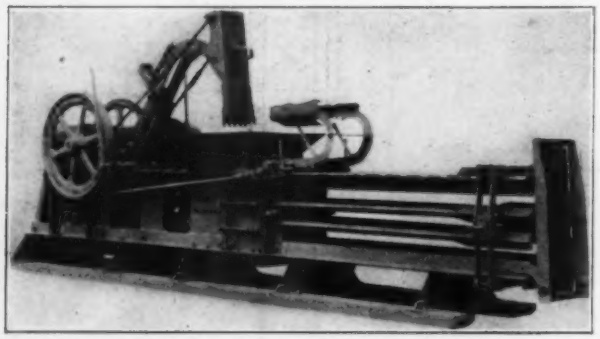
American Well Works Non-Clogging Centrifugal Pump

Fluids containing stringy matter, mineral matter, animal matter, and vegetable matter, such as hair, string, waste, shavings, rags, mud, chips, sand, sludge, wire debris, fat, grease, weeds, straw, etc., can be handled successfully.

This pump is made in both vertical and horizontal types and is adapted for municipal sewage and general industrial use.

New Paper Baler Made of Welded Steel

THE new type of baling press for baling waste paper, etc., shown in the accompanying illustration is made by The Ohio Cultivator Company, of Bellevue, Ohio. Riveting of the structural members has been entirely replaced by electric arc welding. It is claimed that one of the principal difficulties with baling machinery has been eliminated by this type of construction. Using riveted construction, during the use and abuse of the equipment the rivets were likely to work loose. On the other hand, it is stated that in the welded design, the welded joints have been made so much stronger than the strength members that it would be necessary to wreck the whole machine before the joints would work loose or fail. To make the various parts of the machine replaceable, some bolted joints are used so that the machine can be taken apart.



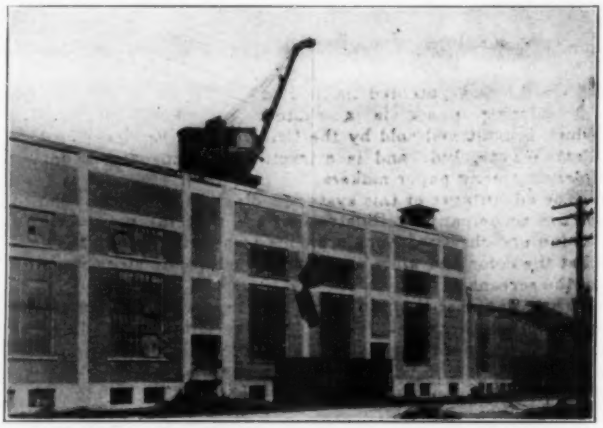
Ohio Cultivator Co. Paper Baler

The Ohio Cultivator Company has developed a wide field of usefulness for Lincoln Stable-Arc welding in the manufacture of agricultural machinery and baling presses. A number of pieces formerly made by use of gray iron castings are now made of pieces of steel welded together. The advantage claimed is that the equipment can be built in welded steel with less weight and that it will not break in service. Careful inspection methods are followed to insure each weld made against defective workmanship in spite of the fact that the weld is designed for more than twice the factor of safety usually allowed in riveted steel construction.

A Unique Crane Installation

THE Miami Paper Company at its West Carrollton, Ohio, plant has installed and successfully operated a unique method for handling coal from railroad cars to its boiler plant. The procedure has materially reduced costs of handling, cut down the number of men required and resulted in substantial maintenance savings, according to Joseph McNabb, chief engineer of the company.

A McMyler-Interstate crane, mounted on the roof of the firm's boiler house, is used to handle coal from railroad cars to the shaft which ends at the top of the building and which carries the coal to the interior. Previously to the installation of the crane, a bucket conveyor had been used to do the work.



McMyler-Interstate crane on roof of Miami Paper Co.

"This bucket conveyor we found very expensive to operate and maintain," says Mr. McNabb. "The maintenance cost averaged about four thousand dollars a year.

"In addition five men were required twenty-four hours per day to operate the conveyor system. Now with the McMyler cranes, one crane operator and one man in the coal car will do the same work in three hours per day.

"Since we have had our crane in operation on this work for ten years, we are of course in a position to give an accurate comparison of maintenance costs between this present system and the former conveyor method. The maintenance cost of the crane since installation has been around $170 per year, as against the average of $4,000 per year for the bucket conveyor.

"The maintenance cost figure for the crane includes all new cable, which has been required, two cable sheaves and two sets of brushes for the motor."

Automatic Alternator for Duplex Vertical Centrifugal Pump Units

AN AUTOMATIC Alternator, especially designed to automatically alternate the operation of each pump in a duplex unit, has recently been added to the line of vertical pumps manufactured by Chicago Pump Company, Chicago.

This new patented device is the only one of its kind on the market today.

The Automatic Alternator eliminates the old transfer switch or button method. It operates so that the work is shifted automatically from one pump to the other. This is done in a one-two method, without the equipment being touched by an operator. First, No. 1 pump operates and then No. 2; then back to No. 1 (1-2; 1-2; 1-2).

In addition to automatically alternating the operation of duplex equipment, the alternator automatically starts the pump not in operation in event the pump in operation fails or is not able to handle all the water. Therefore, during an emergency, or flooded condition, both pumps will automatically cut in and continue to operate until normal conditions are restored, at which time they will resume their alternate operation.

The Automatic Alternator is very simple in construction and thus it is positive in its action.

The company's research engineers believe that the Automatic Alternator is the most practical device so far developed to alternate the operation of duplex vertical sewage ejector and bilge pump equipments.

Harland Sectional Inter-lock Paper Machine Drive to Be Manufactured by Cutler-Hammer

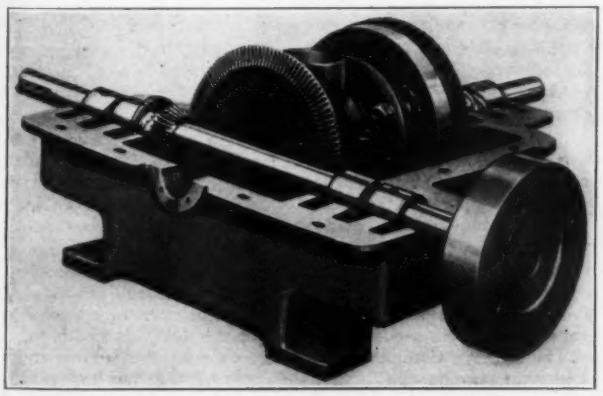
Of interest to the paper industry is the announcement of The Cutler-Hammer Mfg. Co., Milwaukee, Wisconsin, that they have acquired manufacturing and selling rights in the United States for the Harland sectional inter-lock paper machine drive. The product will be known henceforth as the Cutler-Hammer-Harland Sectional Inter-Lock Drive.

While used extensively in leading European and Canadian mills with exceptional results, the drive is comparatively new to the United States.

The Harland system, like all other sectional drive systems for paper machines, employs the Ward-Leonard variable voltage scheme of control for adjusting the sectional motors to obtain the required papermaking speed. It is distinguished, however, from other sectional driving systems by the ingenious method of synchronizing the motor speeds through the Harland, patented, mechanical, differential interlock between the various sections. A few of its major features may be of interest.

An individual motor drive is employed for each section of the machine, the motors being either direct-coupled to the drive shafts, or connected through double helical gears to the machine drive shafts, depending upon local conditions.

Along the full length of the paper machine is run a light master or control shaft, which is driven by the dryer section

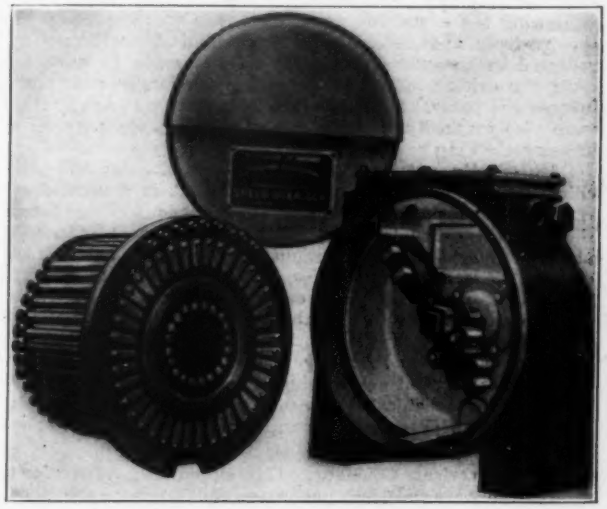


The Differential Gear Unit (Housing Removed)

or by a separate master motor as determined by operating conditions. The master shaft is coupled to a differential gear unit which is provided for each section. The second shaft of the differential is driven by the motor to be controlled through cone pulleys and belt, and the third shaft is coupled to a special shunt regulator connected in the motor field.

The master shaft acts simply as a speed transmitter between the master section and the controlled sections of the machine. When the first and second shafts of the differential units are rotating at the same speed and direction, the third shaft coupled to the regulator remains stationary. Immediately there is any difference in speeds, the third shaft moves in the required direction, actuating the regulator and correcting the motor speed. If the load variations cause the motor to run slower or faster, the first and second shafts are not in equilibrium and the third shaft rotates, causing the regulator to adjust the motor speed.

The action is practically instantaneous, the correction being applied in a fraction of a second from the moment any change takes place, the net result being that the several motors are kept in perfect operating synchronism.



The Differential Regulator (Cap Removed)

The action of the differential gear is positive. The three shafts being mechanically locked together, the smallest change in speed between the first and second shafts being at once apparent by rotation of the regular shaft.

While the regulator has over a hundred contacts, the gradations of speed are infinite. If the speed called for lies between any two contacts the arm gently oscillates between the two and gives the required intermediate speed.

The advantages of such close, automatic control are at once apparent. The holding of the ratios between sections to such extremely close limits provides an even, vibrationless draw which reduces the number of "breaks" to a minimum.

It will also be seen that such perfect timing is of great advantage in maintaining uniformity of thickness, quality and strength. The steadiness of operation also permits higher running speeds without impairing the quality of the paper.

By eliminating the train of gears, cone pulleys and belts of the usual mechanical drive, increased power efficiency is obtained with a consequent decrease in power costs.

Two Associations Elect Joint Manager

At the meeting of the Waxed Paper and the Gummed Tape Associations in Chicago on December 8, Mr. M. C. Warwick was elected as joint Manager of these two associations. Both of these societies were formerly under the supervision of Mr. O. M. Porter, assistant secretary of the American Paper and Pulp Association, but the work has developed to such an extent that a separate secretary was needed who could give his full time to the work. On recommendation of Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association, Mr. Warwick was elected.

Mr. Warwick is an experienced trade executive, both as a manufacturer and as a practical secretary in the United Typothetae. His headquarters will be in the offices of the American Paper and Pulp Association, New York City.

Notes of the Power Show in New York

Fifth National Exposition of Power and Mechanical Engineering

WITH nearly 500 separate exhibits occupying four floors of the Grand Central Palace, New York, the fifth National Exposition of Power and Mechanical Engineering which opened Monday, December 6 and closed on Saturday, December 11, was the biggest and most successful power show ever held. This applies to attendance as well as exhibits, and business on a large scale was done by all exhibitors. In the accompanying notes on the exhibits, attention is directed mainly to firms who supply apparatus, machinery and equipment for pulp and paper mills.

Viewing the exposition as a whole, one was impressed by the progress and development in mechanical appliances as reflected in the numerous improvements made in machine tools, the exhibits of which were on a far larger scale than in previous years. Improvements in heating and ventilating were also markedly in evidence and the displays were on a larger scale than on any previous occasion.

Of distinctly pulp and papermaking appliances and machinery the number was inconspicuous, but in a perusal of the report which follows many suggestions will be found that are calculated to assist in the improvement of power plant equipment and in additions to existing tools and machinery. Among the novelties, a new photometric cell invented by a member of the research staff of the General Electric Company points to a method of controlling the consistency of paper stock that is impressive on account of its excessive delicacy and sensitiveness of operation.

In its disclosure of new machines, devices and materials the Power and Mechanical Engineering Exposition has amply justified its purpose in demonstrating the progress of engineering science in the United States.

Aero Pulverizer Company, 111 Broadway, New York, showed the Aero unit coal pulverizer and burning equipment.

Air Preheater Corporation, 25 Broadway, had an exhibit of much interest to pulp and paper men, consisting as it did of working models of the Ljungström air preheater and forced draft systems, with a demonstration of regenerative systems of air heating. Numerous photographs of installations were exhibited. The Lungström air preheater is used in a number of mills, its efficiency in preventing stack losses being marked. The point is made for the air preheater that low grade fuel like wet wood can be burned successfully at high boiler rating.

Ajax Flexible Coupling Company, Westfield, N. Y., exhibited the Ajax flexible coupling of rubber bushing type which is so constructed as to take care of misalignment of off-center drives. Attention was called to the use of genuine Bound Brook bronze bushing that requires no lubrication. The coupling is adapted to variable speeds; the rubber provides flexibility as well as shock absorbing properties.

Alexander Brothers, Inc., 14 South Street, Philadelphia, Pa., made a display of the Alexander line of leather belting, featuring the tentacular belt driving a ventilating fan to demonstrate the non-slipping properties of the belt. Owing to a high coefficient of friction and high tensile strength stretch or slipping is obviated. There are installations of this belt in some New England mills.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., showed the Reyrolle armor clad switch gear in operation, a feature of it being its compactness which allows it to fit into small space. Another point made for it is that the operator is safeguarded. Of special interest to paper mill visitors was the Allis Texrope drive, shown in operation as used in several pulp and paper mills.

American Abrasive Metals Company, 50 Church Street, New York, exhibited full-length Feralin Anti-Slip Treads, as well as floor plates and hole covers of Alumalun and Bronzalun. As their names indicate the stair treads, floor plates and coal-hole covers have basis of iron, aluminum and bronze respectively. Imbedded in the surface of the treads, which are offered either hatched or plain, are grains of emery which impart a rough abrasive contact and prevent slipping.

American Engineering & Sales Corporation, 475 Fifth Avenue, New York, showed glassless goggles and glass-silk heat insulation calculated to withstand heat, moisture, and acid fumes. A novelty at this booth was a time clock for alternating current or unbalanced transformers.

American Hoist & Derrick Company, St. Paul, Minn., featured the American model "K" for the handling and reclaiming of coal and other purposes, a strong and versatile machine. Used with an auxiliary crane boom, it can be changed from a shovel to a dragline machine, clamshell or general purpose crane, pile driver or log handler. As a log handler it finds application in the woods operations of pulp and paper mills.

Armstrong Machine Works, Three Rivers, Mich., which is so well known in the paper industry through the Armstrong steam trap, exhibited a standard line of these traps, also steel traps for high pressure and superheat and a compound trap for handling large flows of condensate. The cycle of operation was shown by a glass model.

American Pipe Bending Machine Company, 37 Pearl Street, Boston, showed the Wonder Portable Pipe Bender for use in handling cold pipe, tubing, conduit and coils, a bending machine that is used in a number of paper mill machine shops.

American Pulley Company, Philadelphia, exhibited a line of pressed-steel split pulley and shaft hangers which are much used in pulp and paper mills and on board drop hammer machine. The principal part of the exhibit was concerned with "The Red Truck," which, though constructed of pressed steel, weighs less than a wood truck of equal size.

American Schaeffer & Budenberg Company, Brooklyn, N. Y., showed a general line of indicating and recording gauges and thermometers, pop safety and relief valves and control apparatus for pressure, temperature and humidity.

American Well Works, Inc., Aurora, Ill., had on view the "American" non-clogging centrifugal pumps which are said to be well adapted for conveying pulp in water suspension or fluids of any kind containing stringy matter.

E. B. Badger & Sons Company, 75 Pitts Street, Boston, exhibited Badger self-equalizing expansion joints for high pressure service. These joints are compensated for expansion caused by changes of temperature. The Badger non-clog nozzle for cooling water by spraying was also shown.

The Ballwood Company, 30 Church Street, New York, exhibited samples of fabricated-steel and wrought-iron pipe with welded flanges and square corner Vanstone joints, drilled lap joint and samples of special welding and forging.

The Bayer Company, St. Louis, Mo., exhibited a soot blower for all types of boilers, including a valve-in-head blower, model K-2, with a special attachment to the lower head for providing air circulation through the element when not in use.

R. H. Baumont Company, Philadelphia, exhibited a complete working model of a coal and ash handling system for boiler plants. A cable drag scraper and skip hoist are included in the system operated from car to bunker or to storage field, as well as from storage field to bunker and from bunker to stokers.

Bethlehem Shipbuilding Corporation, Ltd., Bethlehem, Pa., exhibited Diesel engines and Bethlehem-wier and centrifugal boiler feed pumps. The Bethlehem Steel Company was also represented with a coal pulverizer of the new roll tire type.

The Bigelow Company, New Haven, Conn., showed drawings and photographs of the various types of Bigelow boilers, including the Bigelow-Hornsby water-tube boiler with and without integral steel economizers; an electric steam generator was also demonstrated.

Botfield Refractories Company, Philadelphia, exhibited Adamant Fire Brick Cement, which is used chiefly in boiler furnaces to withstand high temperatures. Two arches laid up with this cement and air set featured the exhibit.

S. F. Bowser & Co., Fort Wayne, Ind., showed force-feed lubricating oil filter and heavy oil and grease lubricating

apparatus of special design for use in paper mills and paper-mill power plants.

The Bristol Company, Waterbury, Conn., exhibited a complete line of recording instruments for pressure, vacuum and temperature; water level and electrical voltmeters, ammeters and wattmeters were also shown.

Brown Instrument Company, Philadelphia, exhibited a new electric flowmeter embodying the induction bridge principle, besides other indicating and recording instruments, electric CO_2 meters for boiler front or switchboard, with strip chart having single, duplex and multiple records.

Buffalo Forge Company, Buffalo, N. Y., had some mechanical draft apparatus on view which were of interest to mill engineers. These included fans and blowers for stoker fired and pulverized fuel plants. Ventilating fans and systems of generator cooling and purification of air were also shown.

Buffalo Steam Pump Company, Buffalo, N. Y., showed a new type of high-speed, high-head, single-stage centrifugal pump and other forms of centrifugal pumps for various services.

A. M. Byers Company, Pittsburgh, Pa., featured the Vanstone or lap joint. The impression prevails quite generally among power plant engineers that genuine wrought iron pipes cannot be vanstoned successfully. The A. M. Byers Company have succeeded in vanstoning wrought iron with as small a proportion of loss as is experienced on steel piping. As a means of identifying Byers' pipe in addition to the name and year rolled in metal, a red spiral stripe is painted on the pipe before shipment.

Cleveland Worm & Gear Company, Cleveland, Ohio, exhibited their standard line of worm gear speed reduction units with motor drive.

Cochrane Corporation, Philadelphia, featured the Cochrane product for steam handling, including a deaërating, strainerless conical filter, flowmeter of the indicating, recording and integrating type, with temperature recorders, orifices and flow nozzles, multiport back pressure valves, vertical and horizontal steam and oil separators and high pressure and low pressure traps.

Combustion Engineering Corporation, New York, showed animated pictures of the "Lopulco" pulverized fuel burner and the steam generator in action. Descriptions were given of the various parts of the "Lopulco" system, a section of fire furnace of the self-supporting type and water cooled wall construction being shown.

Crane Company, Chicago, exhibited a line of cast-steel gate valves for pressures up to 900 lb. Among the exhibits at this booth were forged steel globe and gate valves trimmed with Exelloy stainless steel.

De Laval Steam Turbine Company, Trenton, N. J., by means of a little set-up demonstrated a complete pump test. At the opposite end of the exhibit was an electric motor driving two-worm gears—one reducing and the other increasing—to drive a generator, the current produced being fed over to an electro-motor driving a pump which took water from a tank and fed it back into the tank again under a higher head. All necessary instruments to measure capacity of the pump, total head and power input were attached. Also exhibited were samples of turbine rotors, worm gears, helical gears, couplings and blower wheels.

Joseph Dickson Crucible Company, Jersey City, N. J., had a display of graphite greases, paints and other graphite products which attracted a good deal of attention.

Drying Systems, Inc., Chicago, showed "National" and Phenix air filtering equipment.

Edge Moor Iron Company, Edge Moor, Del., presented views of low pressure heating boilers of the cross-drum, horizontal-tube type to meet low headroom conditions. Sections and photographs of box-header type boilers for pressures of 350, 385 and 425 lb. were displayed in the booth.

Erie City Iron Works, Erie, Pa., showed a Unitype coal pulverizer operating at slow speed. A number of photographs and drawings showed installations of water-tube boilers and water-cooled, refractory-lined furnaces for pulverized fuel firing.

Fafnir Bearing Company, New Britain, Conn., showed a complete line of standard ball bearings of different types, radial thrust bearings, hanger boxes, pillow blocks and loose pulleys.

Fairbanks, Morse & Co., Chicago, displayed ball-bearing centrifugal pumps and motors, as well as reciprocating pumps and Diesel engines.

Foster Engineering Company, Newark, N. J., showed various types of pressure regulators and pump governors and the Foster sight flow box, the last named in practical demonstration.

The Foundation Company, New York, exhibited photographs illustrating an extremely wide range of construction work, including pulp and paper mills. Their field covers industrial plants, steam power plants, hydroelectric power plants, railway yards and terminals. Their subsidiary, The Foundation Oven Corporation, designers and builders of by-product coke ovens, showed a model of the Columbia Power Station at Cincinnati, which was built by them, both substructure and superstructure. The designing engineers of this plant were Sargeant & Lundy, construction engineers, Chicago.

Foxboro Company, Inc., Foxboro, Mass., gave demonstrations of indicating, recording, and controlling apparatus for temperatures and pressures, boiler and tank water levels and CO_2 recorders. A full line of Foxboro instruments were displayed on panels and the exhibit included a complete instrument installation for a small plant.

Frederick Iron & Steel Company, Frederick, Md., exhibited a double suction, single stage centrifugal pump, type DSV. The Frederick type R boiler-feed multistage pump or standard stock pump of the Frederick type are efficient to handle pulp stock up to 4 per cent consistency. The superstock pumps have specially designed rotors carrying a separate rotating part on the same shaft with the impeller, a patented feature. A crowd was in constant attendance at the Frederick booth observing interestedly the operation of a Frederick revolving roll coal classifier.

The Fulton Company, Knoxville, Tenn., made a display of the "Sylphon" pressure and temperature regulators, thermostatic water mixer, interlocking valves for fuel oil systems and liquid transmission regitherm.

General Electric Company, Schenectady, N. Y., had exhibits on two floors, one being devoted to steam turbine motors, motor controls, flow meter equipment, battery charging outfits and blowers, and the other to a photometric apparatus of great delicacy which presents interesting possibilities for the pulp and paper industry as a means of controlling the consistency of stock flowing on the fourdrinier wire. In this apparatus, two photoelectric cells are so arranged that the change in current through the cell caused by a change in the quantity of light entering the cells will actuate a milliameter and a relay, the relay controlling two grouped electric-light bulbs. A photoelectric cell resembles an ordinary radio bulb with a silver interior coating. On one side is a clear spot for the ingress of the light rays, the opposite side being coated with potassium hydride which acts as a filter. Potassium is exceedingly sensitive to light and the mechanism is so delicate and sensitive that it registers the shadow cast by a human hair; even a puff of smoke invisible to the naked eye will affect the current passing through the photoelectric cells and be registered by the milliameter. A stream of pulp stock passing in front of the aperture for the ingress of light rays has an effect on the current equal to the density of the pulp, the difference being registered in degrees on the milliameter. It is easy to understand that a standard could be established for a desired thickness of paper which could be related to pulp consistency, and any deviation in the consistency of stock being registered immediately could be as quickly corrected. In detecting the tints of shades of any primary color the device is 2,000 times more accurate than the human eye. The principle of this photoelectric cell has been applied practically in determining the quality of tobacco leaves and the purity of liquids.

Gits Bros. Manufacturing Company, 1940 South Kilbourn Avenue, Chicago, made an interesting exhibit of oil cups, oil-hole covers, and gravity and capillary attraction wick-feed oilers.

Girtanner Engineering Corporation, 122 Greenwich Street, New York, showed steam jet and hydraulic ash conveyors together with soot and fly ash removal systems. The model of an ash conveyor on a small scale was operated and added to the interest of the exhibit.

Hardinge Company, Inc., York, Pa., exhibited a model of their well known superthickener and clarifier which has been proposed for use in the pulp and paper industry for the recovery of fiber and clay from white water. Working models were also exhibited of the Hardinge conical mill and reverse-current classifier.

Hendrick Manufacturing Company, Carbondale, Pa., exhibited perforated metal screens, interlock gratings, elevator buckets, conveyor troughs and flights. The Mitco interlock steel flooring was shown. This is much used for power plant walkways and for armoring concrete platforms and floors in paper and pulp mills. A steel platform equipped with the Mitco Shur-Site stair treads was a prominent feature of the exhibit.

Hoffman Specialty Company, Inc., Waterbury, Conn., made an interesting display of machinery and literature pertaining to Hoffman vent valves and the Hoffman vapor heating system, as well as trap valves and the Hoffman blast trap.

Hyatt Roller Bearing Company, Newark, N. J., showed roller bearings for all kinds of transmission equipment. Among other machinery shown was the Lo-Head Hoist, manufactured by American Engineering Company, of Philadelphia, and equipped with Hyatt roller bearings, as well as a new G. E. motor and a railway journal similarly equipped. Beaters and jordans could take anti-friction bearings of this type to advantage. Split-line shaft boxes, dumb-bell-shaped, to fit all makes of hangers were also exhibited.

Ingersoll-Rand Company, 11 Broadway, New York, made an impressive display of Cameron pumps, both single and multistage. By courtesy of the Solvay Process Company, a Cameron H.M.T. 900 lb. pressure boiler feed pump providing 350 gallons a minute at 3,500 r.p.m., which is shortly to be installed at the power plant in Syracuse, was the center of attraction. An important feature of multistage pumps is the Kingsbury thrust bearing, which takes care of slight thrusts inevitable because of wear and maintains alignment of rotor.

Irving Iron Works, Company, Long Island City, New York, showed Irving subways as used in power plants, a feature of which is visible edge steps. The open steel flooring characteristic of the construction is used for armoring concrete floors and for walkways and platforms in industrial plants, several pulp and paper mills having installations of this kind. An advantage of the Irving subway is that it provides light and ventilation. The Irving subway, so called, is also used as a gallery beside the upper parts of machinery.

Jeffrey Manufacturing Company, Columbus, Ohio, demonstrated eight methods of handling coal and ashes, with their Jeffrey pivoted bucket carriers for power plants of large capacity; Jeffrey V-bucket conveyors for power plants of large or medium capacity; standard bucket elevators and scraper conveyor, rubber belt conveyors for coal, spiral conveyors for coal; drag chain conveyors for ashes; skip hoist for coal or ashes and Jeffrey crushers and weigh lorries.

Lincoln Electric Company, Cleveland, Ohio, attracted attention to their exhibit with a motor operating under water. Specialties of this firm include arc welders and link-weld motors which represent a striking advance in electric motor construction. Waterproof coils are used on the motor, which operates in water or under damp conditions such as prevail in pulp and paper mills.

Locke Regulator Company, Salem, Mass., exhibited steam specialties featuring the Locke damper regulator, the first hydraulic regulator invented, which is used to a large extent on pulp digesters. Blue prints were shown of the Locke triple acting paper drying regulator. Among other exhibits were a line of reducing valves and safety devices for preventing overspeeding of steam engines.

Lunkenheimer Company, Cincinnati, Ohio, showed electrically operated, steel, monel-mounted, nonreturn valves and gate valves with Dean and Liberty controls, as well as a full line of small valves in gate, globe, check and blow-off form, steel, monel-mounted, and all money.

McLeod & Henry Company, Troy, N. Y., showed "Steelmixture" firebricks, veneer wall blocks, high-temperature cements and flat suspended arches, besides blocks for the building of boiler settings.

Johns Manville, Inc., New York, exhibited raw asbestos and the processes by which it is converted into insulating materials, roofing, etc.

Mason Regulator Company, Boston, displayed the Mason Line of pressure regulators, reducing valves, pump-pressure regulators, and speed governors, hydraulic damper regulators, float valves and strainers.

Merco-Nordstrom Valves Company, Inc., 110 West 40th Street, New York, gave a demonstration of pressure and micrometer gauges showing the pressure it is possible to put beneath lubricated plug valves, a line of which was shown.

Merrick Scale Manufacturing Company, Passaic, N. J., had a display of the Merrick mechanical weightometer in operation.

Mixing Equipment Company, Inc., 229 East 38th Street, New York, showed rapid and efficient electrically operated fluid and semi-fluid mixers, universally adjustable machines, portable and built in, especially well adapted for triturating coating compounds in paper work.

Moore Steam Turbine Corporation, Westfield, N. Y., demonstrated the operation of the Moore 4-stage double suction pump. This was driven by a multistage non-condensing turbine; a setup of the Moore oil relay governor showed actual operation. By means of a rheostat on the motor driving the governor it was easy to observe the valve travel. Other apparatus exhibited included the Moore double helical reduction gear which is often used on paper machine driven either for direct connection or line drive.

Morse Chain Company, Ithaca, N. Y., showed silent chains of different sizes in operation, the rocker-joint construction of the chain being featured.

Nash Engineering Company, South Norwalk, Conn., featured the Nash Hytor vacuum pumps and compressors, as used in pulp and paper plants, and condensation pumps for heating systems as well as circulation pumps for hot water. This exhibit was the most conspicuous of any on the main floor of the Grand Central Palace, a tall illuminated sign serving as a landmark for visitors in distant parts of the hall who might seek to locate the entrance to the exposition. Every visitor saw the Nash exhibit coming and going and there was always a group of engineers and plant managers inspecting the display of pumps or having the principles of their operation explained to them by a willing staff of attendants.

Norma-Hoffman Bearings Corporation, Stamford, Conn., exhibited a complete line of ball, roller and thrust bearings, together with models demonstrating the proper method of applying ball bearings in power transmission machinery.

Norton Company, Worcester, Mass., made a display of furnace refractories and cements composed of silicon carbide.

Oakite Products Company, 160 Thames Street, New York, demonstrated materials and methods for cleaning power-plant equipment and paper-mill apparatus such as cylinders, dandy rolls, Fourdrinier wires, and for reconditioning felts; the reclaiming of wiping rags and for cleaning valves, pumps, the surface of condensers and other parts of machinery and apparatus where dirt, oil or pitch may collect.

Pennsylvania Crusher Company, Philadelphia, exhibited working models of Bradford coal breaker and armoframe coal crushers.

Pennsylvania Pump & Compressor Company, Easton, Pa., showed multistage centrifugal pumps, together with centrifugal boiler feed pumps and a straight line air compressor motor driven.

Permutit Company, New York, displayed a model of a water softening and filtering equipment such as is used in pulp and paper mills and other industrial plants with Zeolite water softeners. In addition there were shown the construc-

tion and method of operation of the Ranarex instrument for recording carbon dioxide and gas density.

Philadelphia Gear Works, Philadelphia, had on display a complete representation of the worm, spur, herringbone and spiral-herringbone types of speed reducing gears made and marketed by the company.

Poole Engineering & Machine Company, Baltimore, Md., exhibited flexible couplings and herringbone reduction gears. There were shown in operation a Poole speed transformer driven from motor through a Poole all-metal flexible coupling. The units were mounted on a cast-iron base plate so as to give an actual demonstration. The speed transformer was illuminated to give the visitor an opportunity to observe the actual operation of the herringbone gear.

Power Specialty Company, New York, exhibited samples of Foster super heaters of convection and radiant heat types, Foster economizers, Foster water-cooled furnaces and the Aero unit coal pulverizer.

Quigley Furnace Specialties Company, New York, make an acid resisting cement which is said to be well adapted for lining sulphite digesters, but their main exhibit was "Hytemp-ite," a material for bonding firebrick and patch in furnace linings; demonstrations were given of the Quigley refractory gun used in patching furnaces.

Ramsey Chain Company, Inc., Albany, N. Y., showed the Ramsey silent chain drives and distributed literature.

Reading Steel Casting Company, Bridgeport, Conn., showed cast steel valves in various sizes and types and in gate, globe, angle and check form to eliminate warping at high temperatures, rustless steel being employed in the trimming.

Richardson Scale Company, Clifton, N. J., demonstrated apron-feed coal scales and a hand-weighing lorry.

Riley Stoker Corporation, Worcester, Mass., exhibited the Riley Atrita unit coal pulverizer as well as a new type poppet valve for operating the Jones stokers for the elimination of steam leakage.

Ruths Accumulator Company, Inc., 292 Madison Avenue, New York, showed illuminated views of Ruths accumulator installations in various pulp and paper plants throughout North America. Included among the transparencies was a view of the tank or reservoir at the Ogdensburg mill of the Algonquin Paper Company.

Schutte & Koerting Co., Philadelphia, Pa., featured boiler-feed injectors, reducing valves and Klinger piston valves, multi-jet condensers, and spur and herringbone rotary gear pumps.

SKF Industries, Inc., New York, exhibited ball bearings for all purposes; radio and thrust single and double, were shown, together with shafting bearings of all types.

F. L. Smidth & Co., Inc., New York, had models on display showing the action of the Lenix short center belt drive, in comparison with open drives, the action of the Lenix drive in preventing slip and consequent loss of power being clearly illustrated, together with the instant automatic response of the Lenix system to peaks and valleys in loads.

Smoot Engineering Corporation, 136 Liberty Street, New York, demonstrated the Smoot combustion control system and gas density regulator. The Smoot control is suitable for any kind of coal combustion whether pulverized, or burned on chain grates or underfeed stokers; it is also adapted for oil gas and sawdust. There was exhibited a model boiler of 3 hp. maintaining steam pressure plus or minus ½ lb., under a variable load of 75 to 225 per cent of rating. By means of a gas density regulator keeping the CO_2 at plus or minus ½ of 1 per cent, the combustion efficiency was maintained at a high point, with an average of 14.

Sumet Corporation, 1543 Fillmore Avenue, Buffalo, N. Y., demonstrated the Sumet metal bearings of non-sizing, non-scoring properties. Sumet metal is a high lead content bronze used in the form of castings, cord bars, gear blanks and machine bushings. The properties of Sumet metal were demonstrated by running a bearing without lubrication on a soft steel shaft at high speed.

Sunlike Illuminating Company, 475 Fifth Avenue, New York, showed daylight lamps, an arrangement of prisms and a bulb of special glass by which the red and yellow rays are excluded to give a soft, cool illumination equal to almost pure actinic daylight.

The Superheater Company, New York, in illustration of the durability of the parts at high temperatures and under severe operating conditions, exhibited units that had been in service for a number of years at the Hell Gate New York Station and the Fordson plant at Detroit.

C. J. Tagliabue Manufacturing Company, Brooklyn, N. Y., displayed the 1927 model Tag mono duplex recorder, for indicating and recording CO and CO_2 in flue gases, with large illuminated dial fitted with red and black pointers. The red pointer indicates any undue CO_2 reduction. An extensive array of thermometers, gages and testing instruments was also shown.

Taylor Instrument Companies, Rochester, N. Y., showed industrial thermometers and indicators, vacuum gauges and barometers. Included were a recording thermometer for calender rolls as well as pressure gauges and recording thermometers for sulphite digesters and bleachers.

Techno Service Corporation, New York, displayed a cut-out model of Borsig 8-in. valve, 400 lb. pressure, at 750 degrees temperature, operated by Cutler-Hammer motor control unit. Exhibits were also made of hydraulic machinery for various pressures, as well as a Brinell portable meter and samples of Borsig special steel for welding on pressure tank for high pressures and temperatures.

Terry Steam Turbine Co., Hartford, Conn., gave a demonstration of single and multistage steam turbines as well as of the uses and construction of reduction gears and flexible shaft coupling of the pin and bushing types.

The Texas Company, 17 Battery Place, New York, had an attractive exhibit consisting of a miniature oil field derrick and pumping unit. The cleanliness and purity of lubricating oils was demonstrated by the constant flow of a thin ribbon of oil some six inches wide that appeared to be flowing over a sheet of glass but which was nothing but pure oil framed within two wire leaders. Handy grip cans, dented to permit of a firm hold, were also a feature of this exhibit.

Tide Water Oil Sales Corporation, New York, made an interesting exhibition of the lubricants manufactured by the corporation, inclusive of oils and greases employed in power plants.

Timken Roller Bearing Company, Canton, Ohio, exhibited a full line of Timken bearings with a device showing how the rollers in a Timken bearing are aligned.

Uehling Instrument Company, Paterson, N. J., showed a new system of automatic control of temperature and a standard line of CO_2 recorders and waste meters; working models were exhibited.

Wailes-Dove-Hermiston Corporation, New York, made a display of tile lined coal and ash bunkers beside Bitumastic and Hermastic paints and enamels for prevention of corrosion.

Walworth Company, Boston, Mass., had an extensive display of valves and fittings, including the Sigma steel gate valve and other specialties. Tests of Kewanee unions were demonstrated.

Warren Steam Pump Company, Warren, Mass., made an exhibit of single and multistage centrifugal pumps, reciprocating pumps and separators.

Warren Webster & Co., Camden, N. J., had representatives on hand to explain the latest developments in vacuum and modulation systems of steam heating; improved apparatus for the quick handling of condensation and air through process systems using steam up to 100 lb. per square inch were also demonstrated.

The Watson-Stillman Company, 75 West Street, New York, showed an interesting array of pipe benders for bending conduit pipes up to eight inches diameter. A 50-ton hydraulic laboratory press and a hydro screw jack were also shown. This firm builds jacks for every purpose as well as hydraulic valves for all pressures up to 10,000 lb. per square inch.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., showed a 7½ kw. turbo-generator unit, a 150-kw. geared turbine generator unit and "Micarta" gears.

Wheeler Condenser & Engineering Company, Carteret, N. J., presented a model of a surface condenser equipped for reversing the water flow in cleaning the condenser, also steam jet air pumps, hotwell pumps, expansion joints and cross-sections, photographs and slides of other Wheeler equipment.

C. H. Wheeler Manufacturing Company, Philadelphia, exhibited a sectional model of a two-stage radojet air pump and a number of photographs of condensers and condenser installations.

T. B. Wood Sons Company, Chambersburg, Pa., showed in operation the U. G. automatic belt contactor on short center belt drive, the advantages of which are economy in purchase cost and power, with a similar saving in belts and floor space. In general power transmission appliances the T. B. Wood Sons Company manufacture everything except chain drives. The firm specialized on short center belt contactors, flexible couplings and clutches. A full line of Wood-Fafnir ball bearings, boxes and hangers was displayed.

Worthington Pump & Machinery Corporation, New York, had an impressive display of pumping machinery, including type L centrifugal pump with horizontal split casing and double suction inclosed-type impeller, a multistage hydraulic boiler feed pump of the volute type designed for 425 ft. head, besides an "Axiflow" sump pump and two vertical and two horizontal single-stage compressors.

Yale & Towne Manufacturing Company, Stamford, Conn., displayed ball bearing, spur geared, chain blocks and trolleys and electric hoists. Their ball-bearing electric chain hoists are used in some of the larger paper mills. Special attention was called to the Yale master key systems for use in industrial plants where the manager may have one key to open all doors and foremen and operators be provided with keys of more restricted application. The company is prepared to make surveys of plants and give advice on equipment and key systems.

Yarnall-Waring Company, Philadelphia, showed Yarway blow-off valves for pressures up to 900 lb., the last-named being equipped with protected packing. A Yarway-Lea-V-notch recording liquid meter was shown in operation. This gives a continuous reading of water flowing through a sectioned tank with a hook gauge attachment to check the meter at any period in its operation.

The Poole Engineering & Machine Co., Baltimore, Md., announces with deep regret the death of Mr. George Simpson, formerly chief engineer of that company. Mr. Simpson died at the age of 79 years, and had been associated with the Poole Co. for a good many years. About two years ago he was forced to retire from active business, due to declining health.

Program of 50th Annual Convention of American Paper and Pulp Association, Waldorf-Astoria Hotel, New York City

Tentative Schedule of Meetings

MONDAY, FEBRUARY 21, 1927

FORENOON

9:30 Technical Association.....Rooms 109, 110, 151

AFTERNOON

2:00 Technical Association.....Rooms 109, 110, 151
3:00 Southern Kraft Manufacturers Ass'n..Room 112

TUESDAY, FEBRUARY 22, 1927

FORENOON

9:30 Technical Association..... ...Myrtle Room
9:30 Cost Association of the Paper Industry.Room 115
10:00 Tissue Paper Manufacturers Ass'n....Room 110
10:30 Converting Paper Mills Ass'n.....Room 114
10:30 Salesmen's Ass'n of the Paper Indus..East Room
10:30 American Waxed Paper Ass'n.....Room 112

AFTERNOON

12:30 Cost Ass'n of the Paper Industry—Luncheon .....Room 115
1:00 American Waxed Paper Association—Luncheon .....Room 112
2:00 Cost Ass'n of the Paper Industry....East Room
2:00 Technical Association.....Myrtle Room
2:30 Cover Paper Manufacturers Ass'n.....Room 110
2:30 U. S. Pulp Producers Ass'n.....Room 114
2:30 Toilet Paper Converters Division—Tissue Paper Manufacturers Ass'n..Room 106
2:30 Sheet Tissue Division—Tissue Paper Manufacturers Ass'n.....Room 109

EVENING

7:00 Salesmen's Ass'n of the Paper Industry—Dinner.....Roof Garden Waldorf

WEDNESDAY, FEBRUARY 23, 1927

FORENOON

9:30 Technical Association .....Myrtle Room, 110, 151
9:30 Cost Ass'n of the Paper Industry.....Room 142
10:00 Writing Paper Manufacturers Ass'n..East Room
10:30 Cardboard Manufacturers Ass'n.....Room 109
10:30 Woodlands Section, American Paper and Pulp Ass'n.....Room 115
10:30 Wrapping Paper Manufacturers Service Bureau.....Tea Lounge
11:00 Bristol Board Manufacturers Ass'n....Room 114

AFTERNOON

1:00 Glazed and Fancy Paper Manufacturers Ass'n — Luncheon — Canadian Club .....Hotel Belmont
1:00 Paper Makers Advertising Club—Luncheon .....Room 112
1:00 Wrapping Paper Manufacturers Service Bureau.....Tea Lounge
2:00 Technical Association.....Myrtle Room, 151
2:30 Fine Paper Division—Writing Paper Manufacturers Ass'n.....Room 110
2:30 Sulphite Bond Division — Writing Paper Manufacturers Ass'n.....East Room
2:30 National Ass'n of Gummed Tape Mfrs..Room 109
3:00 Southern Kraft Manufacturers Ass'n..Room 114

EVENING

7:00 Technical Ass'n—Dinner.....Commodore Hotel
7:00 Woodlands Section—American Paper and Pulp Ass'n—Informal Dinner...Room 115

THURSDAY, FEBRUARY 24, 1927

FORENOON

9:30 Technical Association.....Rooms 109,110,151
10:30 American Paper and Pulp Association—Annual Meeting.....Astor Gallery

AFTERNOON

1:00 Binders Board Manufacturers Ass'n—Luncheon .....Room 112
1:30 President's Luncheon.....Room 115
2:00 Technical Association.....Rooms 109, 110, 151

EVENING

7:00 American Paper & Pulp Association—Reception .....Astor Gallery
7:30 American Paper & Pulp Association—Annual Banquet.....Grand Ball Room

Program Fourteenth Annual Meeting of Canadian Pulp and Paper Association

To be held at the Ritz-Carlton Hotel, Montreal, January 26th, 27th and 28th, 1927

WEDNESDAY, JANUARY 26, 1927

10:00 A. M.

Technical Section—

Reading of Minutes of Preceding Meeting.
Chairman's Annual Report.
Financial Statement.
Reports of Standing Committees.
1—Committee on Education, T. Linsey Crossley, Chairman.
2—Committee on Chemical and Physical Standards, E. P. Cameron, Chairman.
3—Committee on Wood Measurement, P. J. Murer, Chairman.
4—Committee on Power and Drying, E. B. Wardle, Chairman.
5—Committee on Abstracts and Publications, J. N. Stephenson, Chairman.
6—Committee on Program, O. F. Bryant, Chairman.
New Business.
Appointment of Committee on Nomination.
Paper—"Utilization of Lime Sludge," Dr. John S. Bates, Chief, Research Department, Price Bros. & Co., Ltd., Quebec. (Note: This paper is the result of an investigation carried on by the author in association with the Bathurst Company, Ltd., Bathurst, N. B., and acknowledgment is due that company for co-operation and assistance.)
Adjournment for Luncheon.

10:00 A. M.

Woodlands Section—

Business session for members only.
Reception of reports of chairman and committees.
Election of officers.
Adjournment for luncheon.

2:30 P. M.

Technical Section—

Paper—"Some Fundamental Factors in the Drying of Paper Products," Dr. W. K. Lewis, Prof. W. H. McAdams and Mr. F. W. Adams, Department of Chemical Engineering, Massachusetts Institute of Technology, Cambridge, Mass.
Paper—"The Distribution of the Uncondensed Gases in Paper Machine Dryers," Mr. L. D. Tatley, Laurentide Company, Ltd., Grand Mère, Que.
Adjournment.

(Note: At the close of this session a film entitled "Fighting Furnace Failures: Monolithic vs. Laid Up Refractory in Steam Boilers and Smelters," will be shown by the Beveridge Supply Company of Montreal, through the courtesy of their principals, the Philbico Jointless Firebrick Co., of Chicago.)

2:30 P. M.

Woodlands Section—

Business session resumed.

THURSDAY, JANUARY 27, 1927

10:00 A. M.

Technical Section—

Paper—"Construction and Operation of a Segmental Pulp-Stone," W. W. Greenwood of the Norton Company's Research Laboratory, Worcester, Mass.
Paper—"Resins in Paper Making," John Campbell, Ph.D., A. R. T. C., Abitibi Power & Pulp Co., Ltd., Iroquois Falls, Ont.
Adjournment for Luncheon.

10:30 A. M.

Woodlands Section—

Paper—"Practical Considerations in Calculating the Cut," A. Graham, Quebec Forest Industries Association.
Paper—"Solving Problems in the Practical Handling of Freehold Timber Lands," H. L. Churchill, Finch-Pruyn Co.
Paper—"Fire Protection by the Operator," W. G. Wright, Price Bros. & Co., Ltd.
Adjournment for Luncheon.

1:00 P. M.

Annual Joint Luncheon—

Technical, Woodlands and Research Sections in the Grill Room. Speaker, Mr. B. K. Sandwell.

2:30 P. M.

Technical Section—

Paper—"Steam Generating Units," John Blizard, Research Engineer, Power Specialty Company, 111 Broadway, New York.
Paper—"Combustion Control," Lieut.-Col. James Mess, Mechanical Engineer, Dominion Flow Meter Co., Ltd., Toronto, Ont.
Paper—"Solubility Relations of Sulphur Diocide," W. B. Campbell, Pulp and Paper Division of the Forest Products Laboratory, Montreal.
Report of Committee on Nominations.
Adjournment.

7:30 P. M.

Cabaret Dinner, Mount Royal Hotel—

(Tickets for the Cabaret Dinner as well as for Thursday's Luncheon may be obtained at the Secretary's office.)

FRIDAY, JANUARY 28, 1927

10:00 A. M.

Annual Meeting of the Canadian Pulp and Paper Association.

Order of Business—
1—Minutes of Preceding Annual Meeting.
2—President's Annual Address.
3—Reports of Sections:
Board Section.
Book and Writing Section.
Chemical Pulp Section.
Coated Paper Section.
Felt Section.
Mechanical Pulp Section.
News Print Section
Research Section.
Technical Section.
Tissue Paper Section.
Waxed Paper Section.
Woodlands Section.
Wrapping Paper Section.
4—Secretary's Financial Report.
5—Resolutions.
6—Election of President.
Adjournment.

The annual meeting of the News Print Section will be held immediately upon adjournment of the association meeting.

1:00 P. M.

Annual Luncheon—

Guest of honor, Sir Henry Thornton, President of the Canadian National Railways.

2:30 P. M.

Coated Paper Section—

7:00 P. M.

The President will entertain at dinner, in the ball room, preceded by a reception in the blue room.

A meeting of the News Print Service Bureau will be held at 3:00 P. M. on Friday, January 28th.

BRITISH CORRESPONDENCE

Present Trade Conditions

The seven months of this year during which the coal strike was in operation, have had disastrous effect on the paper industry in this country. All sections have suffered, though some have felt the results in greater degree than others. It is considered in trade circles that if uniform measures had been taken the effects would not have been felt to such a degree; but owing to the fact that there are still a great many papermakers outside the trade association, who prefer to pursue an independent policy, a lack of co-ordination has inevitably resulted. Concerted action with regard to the control of prices would doubtless have produced more uniform distribution of the evils of the strike, and many of the mills which were compelled to close down, or partially close down, might have been kept going.

Both the woodfree section and the wrapping mills applied a surcharge to meet increased costs of production, and are continuing to do so until things approach normal; but the fine writings made practically no alterations in their existing prices.

It will be many months before the effect of the strike can be overcome, and deficiencies on the present year's trading made up; but good demands are expected so the outlook is reasonably promising. The increase in esparto prices, mentioned last month, has resulted in a rather serious decrease in orders, owing to the fact that producers of body paper for coated varieties, in which esparto is used, increased their prices a farthing a lb., to balance to some extent the increase of ½d per pound on the raw material. The esparto firms have now reduced their increase to ¼d per pound, which increase will be in operation until March of next year, when the price question will again have consideration.

There is no doubt that these increases in the charges will restrict paper buying in the immediate future, and there will be little more business done until the end of the year; but there is every sign that things will take a turn for the better at the beginning of the New Year, and that consumers will tend to replenish their stocks to normal requirements.

Effect on Other Countries—The effect of the British coal strike has been felt elsewhere than in the British Isles. The Belgian paper industry has been effected to a serious degree by the shortage of fuel. Several works were obliged to work on short time and to restrict their output. This has inevitably affected export, which is a vitally important side of the Belgian paper industry, for the needs of the country to no extent absorb the normal output of 157,000 tons of paper, and about 50,000 tons are exported annually.

A different situation obtains in Poland, however, where the paper industry, although it has improved considerably during the past year, does little more than supply the needs of the home market. The export trade is small, and is confined mainly to cigarette and carbon paper, which are exported to Great Britain, and other European countries. On the other hand, Poland supplies considerable quantities of timber to the British market, and this has increased considerably during the last two years, 60 per cent of their exports of sawn timber coming to this country.

Country of Origin Stamped on Imports—The Merchandise Marks Bill, which is at present passing through Parliament, and will shortly become law, resulting in an Act by which every article imported into this country must bear clearly marked upon it the country of its origin, is causing questions to be asked in the paper industry. For one thing, it is doubtful what will constitute a separate article. As each sheet cannot be marked, it is wondered if the stamping of each ream wrapper with the words "Made in ———" will be sufficient. The distributor is to be responsible for stamping goods of foreign origin before passing them on to the consumer, and here again a difficulty arises, as to who is the consumer, the printer, or the person buying printed matter from him. In the latter case, it would presumably be necessary for the printer to add to his usual imprint "Printed on paper made in ———." Doubtless, most of these points will be made clear when the Act is brought into force.

The need for bringing the paper maker into closer touch with the user of paper is being more and more realized in this country. It is impossible for papermakers, with the exception of the newsprint producers of course, to understand the real needs of the printers making use of his paper, because he never comes into sufficiently close contact with them. Many printers owing to their limited knowledge of paper, limit their purchases to a few stock lines which happen to answer their purposes satisfactorily, and which are available from their particular wholesaler. The trouble would appear to arise from the fact that many wholesalers and paper agents are nothing more than salesmen, and do not make sufficient effort to study the needs of the printers, and to bring to their notice samples supplied by the various manufacturers. Unsatisfactory work in many printing factories is mainly traceable to this failure on the part of both printers and paper agents to use more discrimination in their choice of paper.

A Ten-Day Course in Sulphite Manufacture

An intensive ten-day course of instruction in the manufacture of sulphite wood pulp will be given by the U. S. Forest Products Laboratory, Madison, Wis., February 28 to March 10, and will be repeated March 21 to 31. The decision to give courses especially adapted to the needs of sulphite superintendents and tour bosses was made in response to urgent demands from the trade. The instruction given the February 28 class and the March 21 class will be identical.

All of the experimental and consulting facilities of the laboratory's pulp and paper division will be placed at the disposal of the sulphite makers. In order to insure ample personal attention for each student, only 15 men will be enrolled in each class.

The new courses will give instruction in and demonstrate by experimental cooks and by yield, strength, and bleach determinations, principles of sulphite cooking developed through several years of research. The sulphite cooking methods to be demonstrated have proven in mill tests to result in better yields and greater uniformity of product than usual mill practice.

Fifteen lectures will be given to each group of men enrolled. In connection with the demonstration cooks, the technique of the several tests necessary for the control of cooking and for determining yield and quality of pulp will be taught by having the students themselves test the product of the cooks. The application of experimental results to mill operations will be discussed.

A feature of each first day's program will be an informal conference of students and instructors in which the various mill representatives will present mill problems which they want to hear discussed. Students will also have the opportunity to clear up by personal consultation any questions which may remain unanswered after the conclusion of the lectures and demonstrations.

A demonstration will be made of the recently developed use of the rod mill as a refiner for sulphite screenings.

Some of the lecture subjects are as follows: "Pulp quality and methods of determination," "Cooking: The acid," "Cooking: The pressure rise period," "Pressure and temperature in cooking," "Regulation of yield and pulp quality," "Cooking hemlock and hardwoods."

Since no Forest Service funds are available for instructional purposes, a co-operative fee of $250 will be required of each mill representative enrolled in the short courses.

Applications for enrollment, specifying whether the February 28 or the March 21 course is preferred, should be addressed to the Director of the Forest Products Laboratory, Madison, Wisconsin. Present plans do not provide for repeating the courses.

It was with deep sorrow and regret that the many friends and business associates of Mr. Frank W. Cabble, President of the Wm. Cabble Excelsior Wire Mfg. Co., learned of his death on December 13, 1926. Mr. Cabble's death came as a result of ailments which had lasted four years.

News Briefs from Washington

Consular Reports

Norwegian Situation Desperate—As a consequence of the decision of the Arbitration Court in the Norwegian paper conflict, which gave a reduction of wages greater than the workers had agreed to accept but smaller than the employers claimed, several concerns have given their mill operatives notice, while three factories have not yet resumed work, and the situation has become still more serious owing to the lack of coal and the sharp rise in the value of the krone. Two factories in addition have been obliged to stop work, the Yven Mill and the Svelvik Paper Factory, while the Bensdalen Mills, Ltd., have given 300 workers notice owing to lack of coal, unfavorable exchange conditions, and high wages. Among the mills that have stopped work are also the Vestfos Cellulose Mill, and the Mjondalen and Katfos Paper Mills. From the export point of view, it is declared in the trade that the entire paper industry should cease work. The enhanced krone value means 35 krone less per ton of cellulose while expenses for coal have risen 50 krone per ton and the reduction in wages in accordance with the decision of the Arbitration Board means only 10 krone per ton. Conditions in the market are reported to be desperate and further stoppage and unemployment are expected in January. Some factories will doubtless continue while their stocks of coal last but thereafter they will have to stop.

The Norwegian Government committee appointed to investigate the use of sulphite spirit as a motor fuel has, after various experiments, recommended that a mixture of 25 per cent spirit and 75 per cent petrol be put on the market. An arrangement has been made with the importers of gasoline to act as distributors of the new fuel, which will be on sale next spring at the same price as ordinary petrol. The new mixture is said to give highly satisfactory results.

Great Power Project and Mill for Finland—The Commercial Attache at Helsingfors, Finland states that the purchase of the Niskakoski Rapids of the Ulea River from the A/B. Ulea by a consortium involving British capital probably presages the erection of the largest pulp mill in the country. These rapids can generate about 25,000,000 h.p., and it will also be possible to deliver power for the electrification of North Ostrobothnia. The cost of building it is estimated will amount to about 100,000,000 Finnish marks. This project is worthy of special note, since all the pulp wood which is at present exported from northern Finland will be converted within the country.

Trade Commissioner J. E. Wholean at Rome, Italy, reports that during the past few months the prices of writing paper, print paper, and cardboards of various grades have been generally reduced, as has also been the case in some instances with raw materials. It is the opinion of the trade that these reductions have been caused by a marked reduction in demand due to the limitation and forced reduction of consumption. It is believed that in Italy the industry is experiencing the first phase of the establishment of new values due to an improvement in financial conditions and the fight against the high cost of living, of which voluntary restriction of consumption would be an element. It is expected that producers and consumers will alike undergo hardships, but if some degree of stability is reached it will be decidedly worth while from an industrial point of view.

Comment is also offered on the effect of the increased duty on newsprint entering Italy which took effect last October, the previous duty of 5 lire per metric quintal (220.5 pounds) having been raised to 8 lire. Italian newsprint manufacturers calculate that if no newsprint were imported they would be obliged to work at about 88 per cent of capacity to supply the country's total demands, but if importation were to continue as before they would not be obliged to work at more than 50 per cent of capacity to supply the market. They state that they can expect no relief from increased exports because these have practically ceased owing to unfavorable exchange conditions and the rapid revaluation of the lira. They continue to hope that the increased duty will prevent dumping in Italy, which has been indulged in by German mills under the previous low rate of duty.

German Paper Situation—Assistant Trade Commissioner Nash at Berlin notes the dissolution of the Dresden Cardboard Sales Union on November 30, 1926, owing to disputes between the Board of Directors and certain members. As is well known, the German paper industry is closely organized into a comprehensive powerful chain of cartels which often control both domestic and foreign prices. In September, as the result of a long-standing dispute, ten firms gave notice of their intention to withdraw from the board cartel. Their complaints were directed against (1) abnormally high salaries for the cartel officials, (2) abnormally high levies for overhead, and (3) extremely low efficiency in service performance. After a suit by the Board for violation of contract the court decided with the dissenters and the Board then at a plenary meeting decided to dissolve the cartel. Following, under the leadership of another cartel, the Association of German Board Manufacturers, the producers have organized several other smaller cartels to take the place of the Dresden syndicate, and the industry and trade are watching this effort with great interest because of the possibility of its preventing the threatening cutthroat competition which would result from the absence of any union. These smaller cartels, like the original, will control both production and prices. Others are in process of formation for additional branches.

Negotiations between the Association of German Print Paper Manufacturers and the Association of German Newspaper Publishers for a reduction of the price of newsprint after January 1, 1927, appear to have broken down. The publishers wished a reduction in price to 29 marks per hundred kilograms, while the manufacturers felt that they were straining a point in guaranteeing the maintenance of the present prices, which are slightly over 31 marks, until June 1, 1927. The prices of raw materials are advancing rather than receding, the manufacturers state, and they can not consider any reduction. As a result of the failure of the negotiations the Publishers Association issued the following advice to members: (1) Whenever possible split up orders and place no large amount with any one producer. (2) Contracts should be drawn up for as short periods as possible, never for more than six months. (3) Be cautious. Mills outside the Association have quoted 29 pfennigs per kilogram. The manufacturers oppose the first, admit the second, and ignore the third.

It is reported that German paper exports are showing a tendency to decrease steadily because of reviving activity in the domestic market, which, basically, is the controlling factor in production. Since July, 1926, exports are said to have decreased 17.3 per cent, while daily production has increased 10.7 per cent with all mills occupied up to 92.6 per cent of capacity. Prices remain high owing to the activity of the cartels and the prevailing high price of raw materials.

Several amalgamations are listed as having taken place within the last few months in the German paper industry. The sale of the Niederlahnstein Parchment Paper Mill, formerly Loebbecke and Co., at Niederlahnstein a./R., to the Inveresk Paper Co. which already owns the former Stinnes organization of Koholyt A/G.; an agreement between the Stettin Paper and Board Mill, formerly Schroedter and Babbaw A/G., the Association for Board Manufacture of Berlin, and the Raw Board Factory at Worms, which comprises about 25 per cent of Germany's raw board production; the conclusion of an agreement between the Brown-Wood (Patent) Paper Factory in Penig and the Freiburg Paper Mill at Weissenborn; and a few smaller combinations whose significance is not yet clear but which are in line with the changes above noted in the board cartel difficulty.

WISCONSIN NEWS

Will Enforce Six-Day Week Law

Paper mills of Wisconsin are making an intensive study of the question of workmen's shifts, so as either to make new adjustments of their schedules and comply with the new State law requiring 24 consecutive hours of rest for all employees, or else to present arguments showing that it is impossible to abide by this law and operate a paper mill business profitably.

The law has actually been on the statute books for some years, but has until now not been enforced against the paper mills because of their peculiar conditions, but a recent announcement from the Wisconsin Industrial Commission seems to indicate that the law will now be enforced. Some mills are trying to meet the requirements of the law by adding more men to the maintenance and repair crews and some by rotating their shifts backward instead of forward.

The new $2,500,000 Bay Side steam plant of the Wisconsin Public Service Corporation, Green Bay, and on which paper mills of Green Bay and vicinity will draw for power, is nearing completion. It is equipped with two 10,000 kilowatt electric generators. This plant, added to its other units, will give the company a total capacity of 81,000 kilowatts.

The success of paper raincoats is being demonstrated by the Reliance Paper Company, of Marinette, which originated the idea and is now producing over 15,000 such raincoats yearly. The company also manufactures waterproof paper bags, vests for fishers and hunters, aprons, bathers' slippers, and various novelties.

Island Paper Co. Receivership Terminated

Final account in the receivership for the defunct Island Paper Company, of Menasha, was given recently in circuit court at Oshkosh by Hugh Strange, receiver. The creditors received approximately 27 cents on the dollar.

Receipts listed by the receiver were listed at $124,436.09, of which $75,000 was the selling price of the plant bought by the newly organized Menasha Paper Mills. The disbursements were given at $30,599.33.

According to Mr. Strange, the books of the company were in very bad shape. Overdrafts aggregating more than $50,000 were found, and some of these had existed for the last 25 years, according to testimony given in court. In view of the circumstances surrounding the case, the extreme age and the impoverished condition of the principal officers of the company, the court recommended that no further action be taken against them.

The annual Christmas party for employees of the Kimberly-Clark Company and their families was held in the Kimberly clubhouse during Christmas week. A large Christmas tree was erected in the park just outside the clubhouse and several smaller ones were put up within the clubhouse. A program in which the children participated was carried out and Santa Claus arrived with loads of candies and other gifts.

Frank Youngman has resigned as manager of the Consolidated Water Power and Paper Company's plant at Port Arthur, Canada, according to an announcement from headquarters at Wisconsin Rapids.

That the manufacture of paper from cornstalks, while possible, is inadvisable as well as too expensive, is the opinion of H. F. Wilson, forester in the University of Wisconsin College of Agriculture. The announcement was made following a request for an appropriation from the State Legislature for research work along this line. Removal of the corn stalks would merely deplete the soil, and because the product is perishable, the paper would not have the enduring qualities of paper made from wood pulp, Mr. Wilson declared. Special machinery would also have to be installed for this process, he said.

A rise in water and an accumulation of ice floes last month caused an interruption and postponement of one of the two power construction projects on the Menominee River by the Northern Electric Company, affiliated with the Northern Paper Mills, of Green Bay. The ice jam carried away a temporary bridge and considerable machinery was submerged by the filling of the coffer dam. The project is at White Rapids. Work was continued, however, at the Chalk Hills project nearby where conditions are said to be more favorable.

The Nekoosa-Edwards Paper Co., of Nekoosa and Port Edwards, against whom the Wisconsin Railroad Commission rendered an adverse decision on its application for sanction of its dam project, has filed suit against the Commission. The board held that the stream dammed, Four Mile Creek, is navigable because it once floated a canoe. If the decision stands, the company must submit to the so-called recapture clause whereby the dam would revert to the State after 30 years at a price based upon the present valuation. The dam has already been built.

John S. Sensenbrenner, Neenah, sales manager of the Kimberly-Clark Co., of that city, has purchased the summer resort property known as Brighton Beach, near Appleton, on which he will erect a $100,000 home. Considerable dredging and refilling will be done first. The property contains a hotel, pavilion, and other buildings which will be razed.

Recent Deaths

Several deaths have occurred recently in the Wisconsin papermaking field. On December 11, Hiram G. Freeman, of Appleton, Wis., for years treasurer and general manager of the Fox River Paper Company, Appleton, and founder of a local bank, died. His father was one of the founders of Ripon College, of Ripon, and his father-in-law was one of the founders of the City of Appleton and Lawrence College here. A number of paper mill executives of the State were present at the funeral.

DeWitt McAlpine, son of Robert McAlpine, Marinette, formerly superintendent of the Marinette and Menominee Paper Company, died at Chicago early last month. He was vice president of the Bradner Smith Paper Company, Chicago.

The wife of Arthur McArthur, Appleton, director of educational activities at the Kimberly-Clark Company mills, died last month while her husband was traveling in the east in the interests of the company.

Miss Barbara Babcock, daughter of C. A. Babcock, Neenah, president of the Wisconsin River Paper and Pulp Company, of Stevens Point, passed away last month.

Further progress has been made in experiments by Charles C. Roth on the manufacture of paper from peat. The experiments have been made on peat bogs on the farm of William A. Grahn, Westfield, former member of the Wisconsin legislature. Grahn and Roth are planning to organize a corporation for the manufacture of the paper. Their aim is to produce 30,000 feet of wall board daily by next spring.

The Northern States Power Co. has announced plans for a $3,000,000 power project to be undertaken in the paper mill district of Chippewa Falls, Wis. The company is controlled by the Byllesby interests of Chicago. The project will be started either in the fall of 1927 or the spring of 1928.

Sale of the Paper City Supply Co., of Menasha, Wis., to the Sawyer Paper Co., of Neenah, including all the paper stock, has been announced.

The Lake Superior Paper Co., of Ashland, Wis., subsidiary of the Menasha Printing and Carton Co., of Menasha, will begin operating its new bleaching plant in February, it is believed. New napkin folders have also been installed. The new equipment will enable the company to take care of an increase in orders.

The new office building of the Neenah Paper Co., Neenah, was formally opened on Dec. 1, with a large number of out-

of-town guests, prominent in the paper industry, present. A banquet was served in the Valley Inn, a Neenah hotel.

The Kimberly-Clark Co., of Neenah, Wis., has been considering the purchase of additional property near its headquarters for the purpose of constructing a large office building.

Vance P. Edwardes, research engineer of the United States Forest Products Laboratory, at Madison, Wis., is giving a series of lectures on various phases of pulp and paper making before classes of vocational schools and paper mills of the Fox River Valley. The lectures are illustrated with motion pictures and slides.

OHIO NEWS

Prosperous Outlook for Miami Valley

Ohio paper and machinery manufacturers report an unusually prosperous year and predict a successful twelve months for 1927. Present indications are of the best. Mill improvements are contemplated in some sections and an aggressive campaign for orders is already well under way.

The most notable improvements in the Miami Valley, one of the largest paper producing sections in the United States, were made in Hamilton, Middletown, Franklin, Dayton and Urbana.

At Franklin, the Maxwell Paper Company is preparing to start its large plant which has been remodeled and rebuilt at an expenditure of $2,500,000. It was formerly the old Harding mill of the American Writing Paper Company, which was bought by Maxwell Howard, of Dayton and Urbana. Mr. Howard is the head of the Aetna Paper Co., Dayton, and the Howard Paper Co., Urbana.

The Champion Coated Paper Co., at Hamilton, added another machine and made other improvements. At present, it is contemplating repairs to its dynamo room caused by a recent fire which cost more than $50,000. The Black-Clawson Company installed the paper machine and also placed other improvements of a substantial nature.

One of the large deals consummated during the closing period of the year and reported in the December issue of this magazine, was the purchase by the Black-Clawson Company, Hamilton, of the Shartle Bros. Machine Co. plant at Middletown. The Company will be thereby enabled to fill any mechanical order coming from a paper mill in any section of the country. The Middletown business, which was acquired for a consideration in excess of $500,000, will be conducted independently, however.

The Crystal Tissue Co., Middletown, after adding a machine, is preparing to make other important improvements, including the possible installation of another paper machine. The company recently completed a large warehouse and is now in shape to handle a much larger volume of business.

During the past fortnight, several large paper concerns in the Miami Valley received tax refunds from the Government. Included in the list was the Aetna Paper Company, Dayton, which was notified of a refund of approximately $240,000. The Franklin Board & Paper Co., of Franklin, received from $13,000 to $14,000.

Holiday Celebrations in Many Points

Holiday affairs in a number of Miami Valley plants were of an elaborate character. Owing to the good run of orders, some of the mills were unable to close for the entire week but virtually all mills and kindred establishments closed on the Friday before Christmas and remained closed until Tuesday.

The Mercantile Corporation, Dayton, manufacturers of all the stamped envelopes and newspaper wrappers for the United States Government, closed its plant for two hours while a specially trained chorus, directed by Miss Mary Geyer, entertained employees by the singing of Christmas carols. Employees assembled in the gaily decorated garage, which was festooned with holly and colors expressive of the Yuletide. Reverend I. O. Moser delivered a brief address and commended the spirit which prompted the celebration representing, as he said, unity of spirit in commercial life.

The Reynolds & Reynolds Co., Dayton, manufacturers of pads and tablets, also gave an elaborate Christmas party, sponsored by the employees. It was held in the recreation and club rooms of the plant. Santa was the honor guest and an entertainment was presented by members of the office and factory force.

Weekly Tests of Drinking Water

Acting on orders from the State Board of Health, the paper mills and other industries of Middletown will make regular tests of their drinking water for employees each week.

Officials from the State department visited the Paper City recently to investigate several fire protection systems in operation in the mills and other plants, and the report of this investigation, now in the hands of City Manager L. A. Waldner, contains more than forty pages, telling in detail what the State Board of Health will require to provide a private water supply from each plant. Copies of this report have been furnished the industrial plants and little difficulty will be encountered by the manufacturers in meeting the situation promptly.

It was stated that at Hamilton, located near Middletown, an analysis of the city's water is made once each week.

Hope to Abandon Miami & Erie Canal

Now that the Ohio General Assembly is in session, the question of what legislation will be enacted is engaging the attention of manufacturers. Among many proposed measures, it seems probable that a bill will be introduced to provide for the abandonment of the Miami & Erie Canal, extending from Toledo to Cincinnati, and touching virtually all of the important paper mill and manufacturing centers in that wide expanse from Lake Erie to the Ohio River.

As indicative of the interest in the proposed measure, a meeting was held recently in Middletown, at which Senator Dearmond and State representative of the district were in attendance. A resolution was passed urging the Legislature to obtain abandonment of the waterway. A Middletown committee is being named to confer with committees is Dayton, Hamilton and Cincinnati for the purpose of drafting the bill.

Middletown industrial, business and civic interests are backing the project of converting the waterway into a heavy-duty State highway, extending from one end of the State to the other. Paper mills still use the canal in a restricted way and there has been a division of opinion up to this time. Recently, there was a legal battle over State and Private rights of water power along the canal in the southern part of the Valley.

Oxford Paper Co. Buys Miami Paper Co.

The Miami Paper Company, West Carrollton, Ohio, of which W. W. Sunderland was president, has been acquired by the Oxford Paper Company, of Rumford, Me., the purchase having been announced by Hugh J. Chisholm, president of the Oxford Paper Company, at the close of the year, who also stated that the plant would remain under its present management. The mill operates four machines with a daily capacity of 110 tons made up of S. and S. C. and M. F. book, bonds, writing ledgers, offset and envelope papers.

Ryerson Appoints Cleveland Manager

Mr. Fred S. Doran has just been appointed manager of the Cleveland plant of Joseph T. Ryerson & Son, Inc. This new warehouse plant of the Ryerson company was purchased from the Bourne-Fuller Company of Cleveland on January 3, 1927.

Mr. Doran has been associated with Joseph T. Ryerson & Son for 21 years. Beginning in the office he travelled the Wisconsin territory for five years, then covered the Chicago city territory for some time, until he was made assistant to Mr. A. M. Mueller, General Manager of Sales.

PACIFIC COAST NEWS

St. Helens Mill Dedicated

Marking the completion of the $2,500,000 pulp and paper mill at St. Helens, Oregon, dedication ceremonies were held at the plant of the St. Helens Pulp & Paper Co., on Saturday, December 18. Construction was begun on the plant about a year ago.

The opening of the new mill is heralded by the industrial life of the lower Columbia River country as a big step in the advancement of that section and the celebration was attended by a large gathering from communities adjacent to St. Helens as well as from Portland.

The large finishing room of the plant was decorated for the occasion and the meeting was held there. Following an invocation, W. P. Hawley of Oregon City, president of the St. Helens Pulp & Paper Company, welcomed the visitors to the plant, and told something of the expectations of the new industry. The Hon. Milton A. Miller of Portland, representing Governor Pierce, gave the principal address, picturing the growth of industries in the Pacific northwest and praising the initiative and energy of the people who made possible the erection of the mill. A response in behalf of the people of St. Helens was made by John L. Foote, district attorney.

Following the program, visitors were taken on a tour of inspection by guides familiar with the plant and machinery. A lunch was then served and dancing was the feature of the evening.

Special passenger coaches were provided by the Spokane, Portland & Seattle Railway company officials to carry the guests to the mill. About 1500 invitations were mailed out and the attendance was very good.

Work on the mill was begun about the first of November in 1925 and the Guthrie company, who had the contract, promised to have the plant completed by December 31 of 1926. Practically all of their work was done a month early and the machinery was put in place and ready for operation by the middle of December. The mill is one of the most modern plants of its kind in the country and most of the machinery is of the latest type, some of which came from Germany. The capacity of the mill will be 50 tons of kraft paper each day. Arrangements have been made so that another unit can be added to increase the production. The paper will be manufactured from sawmill waste and the local mills will furnish this.

Officers of the company are: H. F. McCormick, St. Helens, chairman of the board; W. P. Hawley, Sr., Oregon City, president; W. P. Hawley, Jr., Portland, vice-president; Max Oberdorfer, St. Helens, general manager, and Irving T. Rau, formerly with the Hawley company at Oregon City, secretary and treasurer.

Excavation and concrete work began on the Longview Fiber company, Longview, Washington, about the middle of December. The Hart Construction company received the contract for driving the piling for the foundation of the company's first unit which will cost about $2,500,000, and began the work early in the month.

The Pacific Straw Paper & Board Co., which has been in operation in Longview, Wash., since last April, plans to expand and erect a pulp mill of twenty-five tons daily capacity, President Charles F. Schaub announced recently. Hemlock will be the principal wood used. Contract for the machinery will be let early this year.

Crown-Willamette Extends Reforestation Program

Announcement has been made that the extensive reforestation program instituted by the Crown-Willamette Paper company in Clatsop county, near Astoria, Oregon, will be carried on again this winter on a larger scale than ever before. Approximately a quarter of a million young trees will be set in this season.

The company has large holdings of cut-over land in the Young's River and the Necanicum River valleys where the trees will be planted. All of the trees to be set out will be Sitka spruce and are nursery grown, coming from the company's conifer nursery in West Linn, Oregon.

New Pulp Mill on Grays Harbor

The Crown-Willamette Paper Co. is preparing to build a pulp mill on Grays Harbor, Wash., according to the Aberdeen Chamber of Commerce.

The mill will be erected on a site adjacent to Aberdeen. First unit of the plant will provide for a 100 ton sulphite mill. Construction will be begun as soon as the company can complete arrangements with the city for its water supply. Cost of the first plant unit and number of men to be employed are not stated, but estimates based on costs of similar plants would indicate the unit's outlay at around $3,000,000, and that it will employ between 300 and 400 persons at the outset.

Plans for the construction of an industrial water supply from the Wynooche River have been prepared by the city, which filed on the water rights with the state hydraulic department. The city is planning to arrange a special bond issue to raise funds for construction of the water system.

It is expected that the company will require approximately 10,000,000 gallons of water per day for the initial development and this amount will probably be increased to 30,000,000 gallons per day as the company builds its additional units.

The Portland office of the company confirmed this report and stated that the mill was contingent upon a proper site and water supply. Officers stated that 100 tons a day would be the output in all probability. The fact that the mill would produce only pulp was stressed by the officers.

The Fidalgo Pulp Mfg. Co., Anacortes, Wash., has secured the promise from the city council of an extension of the water supply of half a million gallons daily, the cost to be met by additional rentals and increased rentals to be paid by the company, to retire the necessary bonds in seven years, the company paying some $14,000 annually for its water.

A Greeting From Judge Moore

From the beloved and well-known Judge Chas. F. Moore at Lewisburg, W. Va., we have received the following communication which it gives a great deal of pleasure to insert in our columns:

"I am not equal to the task of sending a personal Christmas greeting to each of my friends, as it would so much please me to do. Will you therefore find room in your publication for this card, and permit my friends, who chance to see it, to accept same as an expression of the good will I feel for every one of them, and also to accept the assurance that I am not ungrateful for all the kindly attentions shown me."

A Record Run

A remarkable run was made on board production at the Chicago mill of the Container Corporation of America, January 6th. The board machine is a vertical dryer type, made by The Black-Clawson Co., and trims 120 inches. On a 24-hour run, the production was 176.85 tons, which we believe is the largest amount ever made on a board machine of any size in 24 hours.

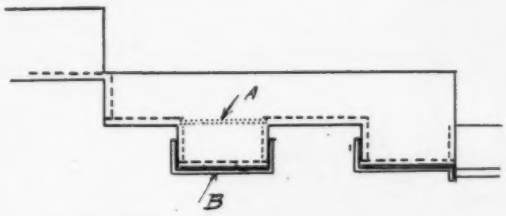
The mill is under the superintendency of Throm Thompson, who was recently promoted from the position of chief engineer.

Oakite Products, Inc., New York City, recently held its annual banquet at the Pennsylvania Hotel, New York City. The banquet was attended by every sales manager, district manager and representative from all over the United States and Canada—some 77 in all. The banquet was the end of four days of business sessions, luncheons and theater parties given by the firm to the representatives and their wives. Prizes were awarded to all sales managers who exceeded their quotas by 25 percent. The prizes were solid gold pen and pencil sets and solid gold cigar lighters. Talks were made by Mr. D. C. Ball, president, and Mr. D. C. Smith, vice-president.

Practical Helps for the Mill Man

Cleaning the Junk Catchers

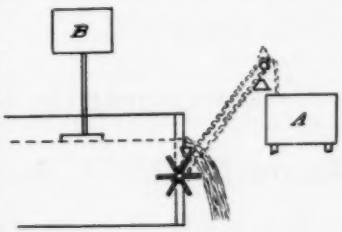
WHERE old paper stock, after being cooked, is run over a riffler, there are usually sumps at regular intervals in the riffler to catch the junk which comes with the stock. In the accompanying sketch is shown one method of cleaning the junk sumps from time to time without shutting down the



riffler. This method insures a rather better job than is usual where the junk is just scooped out as the stock runs through the riffler. A part of a riffler is shown with two adjacent sumps for the junk. In order to clean out the sumps, each is taken in its turn and a board (A) is placed over the sump so that the stock by-passes it. The bottom of the sump is supported by braces such as (B) and this is removed, allowing the junk to fall out. The bottom of the sump being replaced, the board (A) is removed and the next sump is cleaned by the same procedure.

Mill Effluent Sampling Outfit

THE many mills which are giving increased attention to the matter of checking the water discharged from the mill for solid fiber content will be interested in the automatic sampling device in use in one of the most successful mills in the country. All drains into which fiber bearing water could run discharge over a single v-notch wier. At this wier, there is placed a simple paddle water wheel. The water discharge turns this wheel. Running on the shaft with the wheel is a chain driving a second shaft. On this chain are fixed two small "buckets" each of which holds two or three thimblefuls. As each bucket passes through the discharge, it takes up a charge of water. When the bucket gets to the upper shaft, it discharges into the tank (A), which is large enough to hold the bucketfuls for twenty-four hours. At the end of each twenty-four hours the contents of the tank (A) thoroughly stirred represent a good average sample of the mill effluent for that period. A test of this in the mill laboratory, or simply in a centrifuge, gives the average fiber content of the mill effluent for the day. The rectangle (B) represents the recording device by which the average discharge over the wier is determined. There is a float in the wier box and this is so attached to the recorder that a complete graph of the amount of mill effluent for twenty-four hours is available at the same time the sample is taken from tank (A). The combination of the two pieces of information gives the fiber loss for the previous twenty-four hours. Mills which put this device into use will very probably have decreasing losses from fiber going to waste.

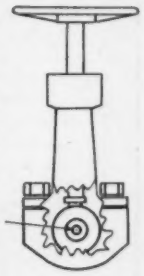


Gear Down the Ratchet On the Wire Guide

INCREASE in speed of paper machines has made the wear on wire guide forks terrific. One paper mill superintendent felt it necessary to do something to save his forks. He arranged to put an extra gear between the guide roll journal and the fork. Now if the fork is working on the ratchet wheel instead of striking once for every revolution of the guide roll, it is geared down to a lower number of strokes and gets equal results beside saving the fork.

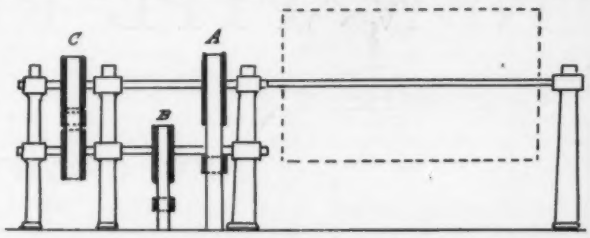
An Aid in Dryer Evacuation Problems

A STEAM plant engineer suggested the following expedient to a paper mill superintendent whose budget would not permit of the installation of a regular dryer evacuation system. The accompanying sketch shows a gate valve and the arrow points to a one-quarter inch hole bored in the disc. One of these valves is installed on the hot-water evacuation pipe on each paper machine dryer. On the start-up at the beginning of the week, the valve is opened wide, allowing the air and accumulated water to escape. After the machine has been running an hour or two the valve is closed and the quarter-inch hole permits the evacuation of the condensate as it accumulates, and the steam is at the same time prevented from blowing through.



Winding Jumbo Rolls Tight

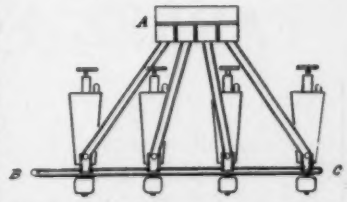
IN A board mill, which has its own converting plant, it is desirable to run the rolls of board to diameters of between fifty and sixty inches. The roll is a two-shaft affair with slip belt drive. It was found difficult to wind the last few inches of the rolls tightly enough. The sketch shows a roll being



wound on the shaft driven by a pulley (A). When the roll becomes large in diameter, the pulley (B) is started running by means of its tightener. Each shaft has been extended and the set of flanged pulleys at (C) provided—one on each shaft. After pulley (B) has been started, the idler on the slip belt on the pulleys at (C) is tightened, and the arc given through the pulleys at (C) by the belt on pulley (B) gives a much tighter roll. This looks like pulling yourself up by the bootstraps, but the device is actually in use in one of the best managed board mills in the East.

Saving Stock On an Overflow

ONE mill has a battery of jordans all jordaning the same grade of stock for the same machine. The whole battery is fed from a single stuff box (A) through open wooden troughs. The system is continuous and automatic and sometimes when the beaterman is elsewhere in the room, one of the jordans plugs up. Short troughs are arranged from the jordan intakes to a long trough (BC). This trough slopes from (C) to (B) and any stock that flows over from the trough supplying the jordan runs down into this trough and so to a chest. This is an aid to neatness in the beater room and a saver of considerable stock on occasion.



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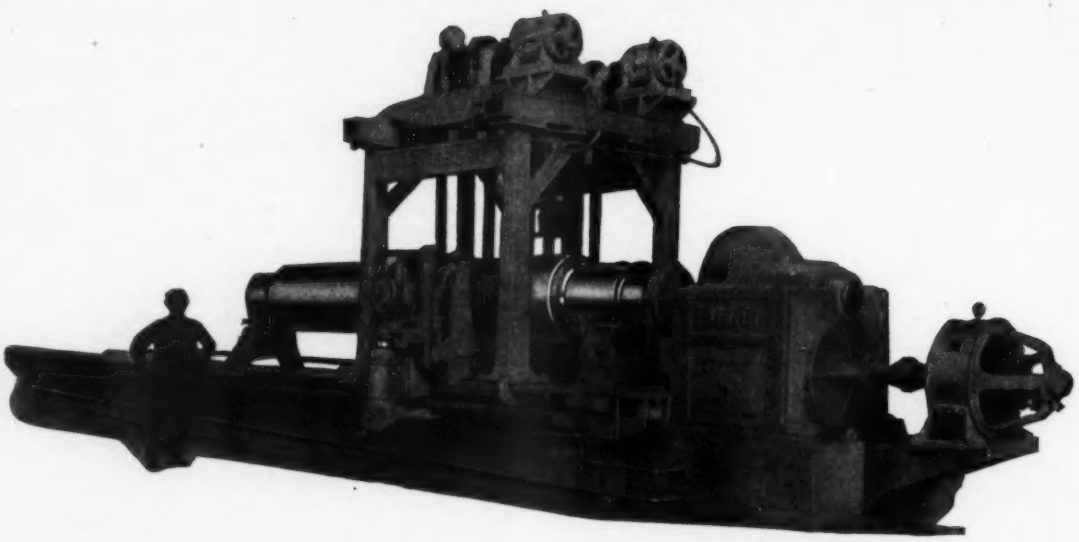

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NORTHERN NEW YORK NEWS

International Paper Mill Burns

The Glen Park mill of the International Paper Co. was totally destroyed by fire on the morning of December 30, entailing a loss estimated to be at least a half million dollars. The origin of the fire is unknown. It was discovered by a night watchman but the flames spread too rapidly for him to fight them. Help was summoned from Watertown and Brownville and they managed to save the pad mill, a three-story frame building adjoining the main structure. One paper making machine was badly damaged and may have been rendered completely useless.

The mill, known in paper mill circles as the C. R. mill, had not been in operation since 1920. It originally contained three machines but two had already been dismantled and moved away. The dismantling of the remaining machine had started the day before the fire.

Taggart to Build at Oswego

Byron B. Taggart, president of Taggart Brothers Co., of Watertown, made the announcement at the Chamber of Commerce dinner in Oswego that early in the spring of 1927 he would begin the construction of a paper bag plant in Oswego. Mr. Taggart announced that the mill would be located upon the lake front and that he had entered into a 25-year contract with the Carlisle interests for water power. The mill, he announced, would be in two units, one for the manufacture of paper and the other for the manufacture of paper bags. He said that the ultimate capacity of the paper bag plant would be 75,000,000 paper bags for cement containers a year. The paper mill will have a capacity of 60 tons daily. The proposed industry will cost $1,500,000 and will employ 500 hands.

Mr. Taggart announced that the business of his Watertown plant was such that expansion was necessary and that he was attracted to Oswego by the excellent shipping facilities. The plant will be built on the shore of Lake Ontario and docks will be constructed so that raw materials and finished products can be shipped by water.

Engineers have already started surveying on a 12-acre tract on the lake shore. Present plans call for the bag factory to be 400 feet long and the paper mill to be 800 feet long. A 164-inch papermaking machine will be used. The plant will be of one story construction, although the bag plant may be raised one story. Mr. Taggart said that at present all the pulp used in making cement bags by his company came from Sweden, but that if he could get proper freight rates he would buy it from Canada.

Paper Merger Rumored

Stories intimating that a large consolidation of paper interests in Northern New York may soon be consummated are in circulation. The stories have it that negotiations have practically been completed for the merging of the Sherman Paper Co., at Felts Mills, the West End Paper Co., at Carthage, the Diana Paper Co., at Harrisville, and the Oswegatchie Paper Co., at Natural Dam.

Nelson R. Caswell, of Gouverneur, an official of the Oswegatchie Paper Co., refused to affirm or deny the rumors referring his questioner to Samuel B. Wardwell, of Watertown, who is connected with both the Oswegatchie Co. and the West End Co. "There is nothing to it," he said. "If there is, I will let you know later." The Oswegatchie mill and the West End mill have virtually the same ownership. J. Victor Baron, vice-president of the Sherman Paper Co., declared that there was nothing to the rumor. The rumor still persists, however, and many consider that the denials were made because the final details had not been consummated.

The annual convention of the International Brotherhood of Paper Makers will be held in Albany beginning March 1. The decision rested between that city and Montreal. About 250 delegates will be present from all parts of the United States and Canada. On March 7, the wage scale conference will be held. The outcome of this will be watched with interest by paper manufacturers generally. On the following day, there will be a joint wage conference held with delegates from the affiliated trades, such as carpenters, machinists, pulp workers, firemen and electricians. If at this conference it is decided to ask for a raise, the matter will be referred to the locals for a referendum. The executive board will meet prior to the convention.

Floyd L. Carlisle, head of the St. Regis Paper Co. and the Carlisle power holdings, is one of the most heavily insured men in the country. Mr. Carlisle is insured for $3,000,000 and only nine men in the United States are insured for a larger sum.

A decision of much importance to the paper industry is expected to be handed down by United States Judge Cooper some time soon. The case is that of the Wood Grinding Service Corporation, of Watertown, against the International Burr Corporation, also a local concern. The action was brought in 1922 for recovery of alleged infringement of patents and to restrain the defendant from making further sales of the patented product, a steel burr used in keeping the surface of pulp stones in uniform condition that a constant high quality of mechanical pulp can be made from pulpwood.

Plenty of Water

The paper mills in the Black River Valley entered the winter in excellent condition as far as water is concerned. E. S. Culings, secretary of the Black River regulating board, said that the conditions were such that there would be a working supply of water all winter. Severe rains in the fall and heavy snowfall in the early part of the winter have filled the reservoirs.

Monthly snow surveys are made throughout the winter to determine the quantity of water stored in the form of snow and the release of the impounded water is based upon the depth of the snow. Wells are drilled at various portions of the Black River water shed for the purpose of determining the amount of water which was soaked into the ground and which will find its way into Black River through the various tributaries. By means of accurate instruments, it is possible to forecast the run off from any of the streams after any given rainfall.

Allen J. Perkins, owner of the Black River Paper Co., has purchased the business of the Watertown Supply Co., owned by L. C. Mooney. The Black River Paper Co. was organized in 1898. Starting with a capital of $1,500 it has become the largest wholesale paper house in Northern New York. In 1919, Mr. Perkins purchased a half interest in the company and two years later he became sole owner.

Andy Doka, aged 38, was instantly killed on the morning of December 8 when he was caught in a belt at the Gould Paper Co. mill, at Lyons Falls.

A judgment of $12,320 in favor of John J. Warren, well known Brownville paper manufacturer and inventor of the Warren magazine pulp grinder, has been handed down by Justice John A. Morrill, of the Maine supreme court, against the Bath Iron Works, Ltd., now in receivership. The case was an equity action brought to establish Mr. Warren's claim against the company as a preferred one. The company had contracted to build three grinders upon which Mr. Warren was to receive royalties under the patents. The machines were sold to the Iroquois Pulp and Paper Co. and were not finished when the receivership was created. Since then they have been completed and delivered, Mr. Warren paying for the electrical control and feed chains. The judgment is to be paid out of funds not subject to lien.

Two hundred and fifty persons were present at the annual Christmas party given by the Harmon Paper Co., at Brownville. The party was held on the upper floor of the mill. The

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party was in charge of Mrs. M. P. Shaver, private secretary to John J. Warren, owner of the mill, and Miss Ethel Dunn. Each was presented with a silver coffee urn. Mr. Warren, who was confined to his home on account of illness, was presented with a large bouquet of roses. A pigskin coat was presented to Edward Hall, assistant superintendent and chemist. Each man employed in the mill was presented with an outing shirt and the women were each presented with a silk scarf. Presents were also given the children.

H. W. Smith, of Carthage, who resigned from the superintendency of the West End Paper Mill, was presented on Christmas with a gold ring bearing the Masonic emblem set in diamonds by the employees of the mill.

John Gomore, an employee of the St. Regis Paper Co., slipped on a sidewalk on the mill property as he was about to punch the time clock and was instantly killed. Death was caused by a dislocation of the neck.

Word has been received of the death of Martin M. Schench, formerly a resident of Watertown, which occurred in Arcadia, Cal. Mr. Schench was the inventor of the Schench patent dryer felt serving machine. About 15 years ago, he went to California and became interested in the oil business.

Jerry J. Lahan, superintendent of woods operations for the Racquette River Paper Co. and for the Sisson interests, died at his home in Potsdam, December 30, aged 66 years.

American Forestry Association Plans Annual Meeting

Prominent foresters, educators, statesmen and lumbermen will be present and take part in the joint annual meeting of the American Forestry Association and the Connecticut Forestry Association to be held at New Haven, Connecticut on January 28-29.

The meeting is to open on Friday, January 28 with addresses of welcome by the Mayor of New Haven and the Governor of Connecticut. The morning session will be devoted to the subject, "Forestry and the Public," and will be presided over by Col. Henry S. Graves, President of the Connecticut Forestry Association. The afternoon session will be devoted to the subject, "Forestry and Industry," and will be in charge of George D. Pratt, President of the American Forestry Association. In the evening a banquet will be held with Wm. A. Bazeley, Conservation Commissioner of Massachusetts, as toastmaster.

The Saturday morning session will be given over to a discussion of New England forestry. The afternoon session will be preceded by a brief business session and will be held jointly with the Connecticut Botanical Society.

A number of prominent speakers are to take part in each session and special excursions will be made to the Yale Forest School and various other points of interest.

Roofing Manufacturers Consolidate

One of the most important developments in the manufacture and sale of building materials during recent years, is the report that the Flintkote Company, of Boston, has purchased the Chetfield Manufacturing Co., of Cincinnati, and the entire roofing business of The Richardson Company, of Cincinnati, Chicago and New Orleans, one of the largest and best known manufacturers in the industry.

It is understood that the purchase involved the Richardson felt mills and roofing plant at New Orleans, complete, as well as all equipment machinery and manufacturing facilities of the Richardson plants at Melrose Park (Chicago) and Lockland (Cincinnati) which latter will be removed to the Flintkote Company's Chicago Heights plant and the former Chetfield plant at Carthage (Cincinnati).

A new corporation, The Richardson Roofing Company, has been organized and the entire Richardson line of roofing materials will be sold exclusively by this new company which will have general offices in Chicago and branches in many other cities.

Arthur T. Cavey, formerly vice-president of The Richardson Company, is president and general manager of the new concern, and brings with him practically complete, the entire executive staff and sales personnel formerly in charge of The Richardson Company's roofing business.

The deal is said to have involved several million dollars and will permit economies in operation and distribution enabling the new company to improve its service and increase the advertising and merchandising support to its many dealer customers throughout America.

Watch Out for These Men

From time to time numerous reports are received about a group or groups of swindlers representing themselves as coppersmiths—refinishers of brass and copper—who obtain rolls from paper mills under pretense of refinishing them and never return them.

In connection with this we have recently received a letter from J. Bertwell White, Superintendent of the National Vulcanized Fibre Co., mill at Yorklyn, Del., from which we quote the following:

"Just this week . . . there were three men in a Cadillac car called at our mill. One of them was a dwarf not over 36 inches tall. The other two men had mustaches, one of medium size about 5 ft. 9 in. tall, and the other about 6 ft. 1 in. tall. The men looked like they hadn't had a bath in some time.

"These men put up a very good argument in reference to processing brass rolls of any description, including press rolls . . . We sent one of our men to visit what was supposed to be their shop and found, in an old dilapidated building, a bunch of gypsies huddled around a stove smoking cigarettes.

In conversation with reference to the resurfacing of our rolls, we told them that we did not feel that we could take time to shut down the plant to take out a roll. They immediately offered to do the job themselves over Sunday, but when we suggested sending our roll down with our own truck, it did not seem to suit them."

At Mr. White's suggestion we are taking this opportunity to warn our readers to be on the lookout for these men and others like them.

Catalogs, Booklets, Etc.

Aero Pulverizer Co., New York City—From this concern (a subsidiary of the Power Specialty Co.) comes Bulletin No. 36, on the Aero Unit Coal Pulverizers. The pamphlet describes and illustrates the construction features of this equipment.

American Blower Co., Detroit, Mich.—Bulletin No. 8001 covers the American "Sirocco" fan. A brief description of the mechanical constructin of the fan is given, together with a number of illustrations. Complete capacity and dimension tables and a number of diagrams for the engineer's use are a prominent feature of the bulletin.

Blaw-Knox Co., Pittsburgh, Pa.—The Blaw-Knox forge and hammer welding process is taken up and dealt with step by step in Catalog No. 25. On the first page are a series of sketches showing the steps in this process. From there, the catalog goes on to tell many of the features of the process and to describe the numerous pieces of equipment made by hammer welding for use in various industries. The catalog is profusely illustrated throughout.

General Electric Co., Schenectady, N. Y.—Mechanical Drive Turbines, Type D, are covered in bulletin GEA 578. Bulletin GEA 544 covers General Electric Dynamometers. Both bulletins are complete with a number of illustrations.

Power Specialty Co., New York City—Foster Water Backs are described in Bulletin 262. The advantages of water cooled furnace walls are set forth and the presentation is greatly assisted by numerous installation views and views of furnaces under construction. Some of the points presented are illustrated by means of charts and diagrams.

A Happy and Prosperous New Year to the Industry and to our friends and associates who are privileged with us to be a part of it — *Good Luck!*

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Canadian Section

Outlook for 1927

The present year promises to be a most interesting one in the Canadian paper industry, and the market for the various products of this industry in the United States will be carefully watched. The past year has provided a surprise for even the keenest students of the paper market, the ability of the big United States market to absorb new tonnage proving little short of amazing. Newsprint of course, is the commodity which will be most closely watched. Contract prices have been maintained at $65, and it is interesting to note that since the maintenance of this price was announced buying has been even more brisk than it was before.

A very substantial amount of new tonnage is coming into production this year, and some are inclined to shake their heads as to its effect upon the industry. The doubters, however, are not nearly as numerous as they were a year ago. Pessimistic opinions and utterances originate, on the whole, from people not connected with the industry, either as operators or shareholders; and their misgivings are certainly not shared by the industry, as evidenced by the constructive dividend action taken quite recently by Wayagamack and Brompton in resuming dividend payments and by Abitibi in increasing its rate of distribution.

In an industry being developed at the rate at which the newsprint industry is being developed in this country, it is inevitable that there should, from time to time, be overlapping in the matter of supply and demand. For instance, in 1925 our mills operated at about 85 per cent of capacity, while last year, with heavy additional capacity, they have operated at as close to 100 per cent of capacity as any industry can hope to operate. In 1925, the well-established companies earned and paid their dividends in addition to improving their working capital positions. A great deal has been done throughout the industry in the matter of reduction of operating costs and each achievement along these lines has pointed the way to new economies.

Amalgamations made and in the making will further tend to reduce costs, as well as eliminate danger of price-slashing in the event of a moderate over-production. In the latter connection it is noteworthy that some dangerous elements have been eliminated in the past twelve months.

Owing to the Trade Treaty passed between Canada and Australia in 1925, by which Canadian newsprint enters the Commonwealth duty free, Canada is already in a fair way to displace Scandinavia completely in that market. Imports of Scandinavian newsprint into Australia fell from 16,534 tons in 1924-25 to 7783 tons in 1925-26, while the imports of Canadian news for the corresponding periods were 284 and 11,720 tons, respectively; and Canada's position is being daily strengthened in this market.

"Paper Week" Promises to Eclipse All Records

Judging from the number of inquiries reaching the office of the Canadian Pulp and Paper Association and the number of reservations being listed at the Ritz-Carlton and other Montreal hotels, "Paper Week," January 26 to 30, promises to bring together a larger and more representative gathering of pulp and paper manufacturers, mill executives, technical and chemical experts, and wholesale distributors of paper and paper products than any preceding event of its kind. Intimations of attendance have been received from points as widely separated as Vancouver and St. John, N. B.

The meetings of the Association proper and its affiliated branches will follow the course of previous years, with the customary business sessions, technical meetings, and social events. More than ordinary interest, however, will attach to the annual business meeting of the Association, since it is expected to decide definitely the question of whether or not the Association will proceed with the plan to erect a research laboratory in Montreal, for which over $300,000 has already been subscribed. Some questions concerning the proposal that still remain undecided are expected to be cleaned up at the annual meeting.

An innovation this year will be the holding of the annual meeting of the Canadian Paper Trade Association, composed of the principal wholesale distributors coincident with that of the Pulp and Paper Association.

The News Print Service Bureau, of which Louis Bloch, of San Francisco, is president, and R. S. Kellogg, of New York, is secretary, will also hold its annual meeting in Montreal during the week.

Two New Factors Favor Canadian Pulp Industry

Two new factors have recently combined to improve somewhat the general outlook for Canadian pulp producers. The first is the reduction in the price of rayon which naturally tends to increase the consumption of this important textile and of sulphite pulp from which it is made. This is the second price cut in rayon in 1926, the first having taken place in July. Both reductions were in the neighborhood of 10 per cent.

The second factor is the recent rise of the Norwegian krone. On October 15 last, the pulp mill strike in Norway was settled, but since that time the krone has appreciated considerably and has thus recreated at least some of the difficulties in which the industry in that country found itself and which brought about the strike of the workers last autumn. The coal miners' strike in Great Britain has also increased the price of coal very largely in Norway.

The Harland Engineering Company has taken orders for ten of their sectional electric drives for paper machines so far this year, as follows: 2 for the Belgo Division of St. Maurice Valley Corporation; 1 for Thunder Bay Paper Co.; 1 for Fort Francis Pulp and Paper Co.; 1 for the Port Arthur division of Provincial Paper Mills; 2 for Ste. Anne Paper Co.; 1 for Brompton Pulp and Paper Co., and 2 for Manitoba Paper Co.

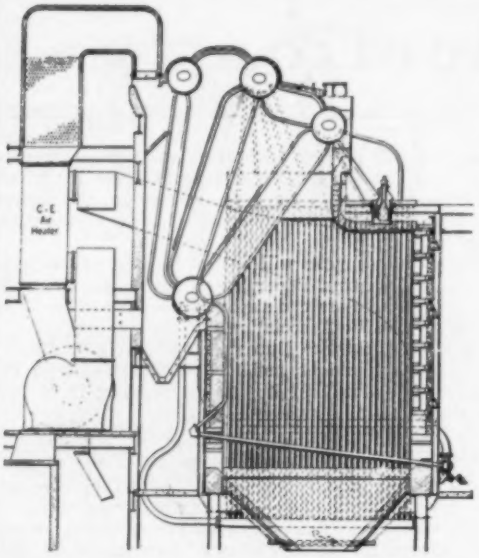
An increase is likely in the near future in the paper exports from Canada to the Orient, according to E. J. J. Randall, publisher of London, England, who sailed recently on the Canadian Pacific liner Empress of Russia, for Japan. "The Orient has always been a good market for Canadian pulp," said Mr. Randall, "but hitherto this has not been true of Canadian paper. A change is likely in this respect, especially if the Canadian manufacturers can reduce their prices a little."

QUEBEC

Power House Completed at Outardes Falls

The Ontario Paper Company has completed its preliminary work at Outardes River on the north shore of the St. Lawrence with the construction of its power house and the development of 1,200 horse power from the Outardes River. The lowest series of waterfalls has been developed and electricity is now available for the model town of Taschereau which is being built by the Ontario Paper Company.

The power will also be used for the construction work, which will start on the mills early next spring. Several thousand horse power will be developed by the company in the course of the summer, so that it is expected that the mills will be in operation at full capacity in the latter part of 1927. Over 500 men will be employed throughout the winter at Tashereau.



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that do not burn nor spall
mean big savings

C-E Fin Furnace Walls

are composed of water tubes connected into the boiler circulation. They will neither burn nor spall

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STOKERS OF ALL TYPES
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HEAD OFFICE—MONTREAL. TORONTO. VANCOUVER. WINNIPEG

What Happens to the Paint in Paper Mills

What happens when an ordinary paint is exposed to acid fumes? What happens when you expose this paint to heat? It's no wonder that an ordinary paint will not stand up under chemical fumes, vapors and high temperatures encountered in a paper mill. It's no wonder that depreciation and repainting costs are high.

These troubles can be stopped by the application of BITUMASTIC SOLUTION to all metal surfaces. BITUMASTIC SOLUTION is a paint compounded from ingredients which are impervious to moisture and highly resistant to acids and alkalies as well as to heat. Try it on all surfaces which cause you trouble. One gallon covers 400 square feet. Order a 5 gallon can or a 30 gallon drum just as a trial and return the unused portion if it does not outlive any other paint you know.

SINCE **BITUMASTIC** 1854
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Brompton Starts Up New Machine

In the middle of December, seven and a half months after breaking ground for their new newsprint mill at Bromptonville, the Brompton Pulp and Paper Company started up their new 234-inch Walmsley machine, which increases their newsprint capacity from 115 to 215 tons a day.

About the same time as the new mill was put into operation, the directors of the company declared a quarterly dividend of fifty cents per share on the common stock. This is the first dividend that shareholders have received since May 16th, 1921. The present stock is the result of a three-for-one split of shares made in July 1920, when parity of the stock was changed from $100 per share to no-par-value.

It has also been announced that C. R. McCort, who has been in charge of the construction of the new newsprint mill, has been appointed assistant general manager.

Cribwork Halted at Limoilou

The Northern Construction Company, which is building the cribwork for the wharves of the Anglo-Canadian Pulp and Paper Company, at Wolfe's Cove and at Limoilou, Que., has stopped work for the winter. About 500 men are affected by this temporary cessation of operations on these two big construction jobs. It is pointed out that the work that remains to be done at both sites cannot satisfactorily be proceeded with during the winter, as much of it has to be carried out on the water. The work will be pushed as vigorously as possible next spring.

This does not affect the workmen employed by the W. I. Bishop Company on the construction of the foundation of the new mill of the Anglo-Canadian Pulp and Paper Company at Limoilou, which, it is expected, will be carried on without let-up until the mill is completed.

In spite of rumors, which have appeared from time to time, indicating that the Wayagamack Pulp and Paper Company, of Three-Rivers, would take part in some consolidation, officials of the company have denied that they were considering any merger with other pulp and paper producers.

Members of the Montreal Publicity Association were recently shown how high grade paper is made when E. G. Rolph, representing the Howard Smith Paper Mills, gave a moving picture demonstration of the many processes through which the raw materials are put to convert them into this quality of product.

Over 50,000 men are now engaged in lumber operations in the various sections of the province, according to figures collected by the Department of Lands and Forests at Quebec, and over 4,000 camps are being used to accommodate them. The year appears to be a record one, according to advance estimates, and the exploitation is said to be going on in each case on a much larger scale.

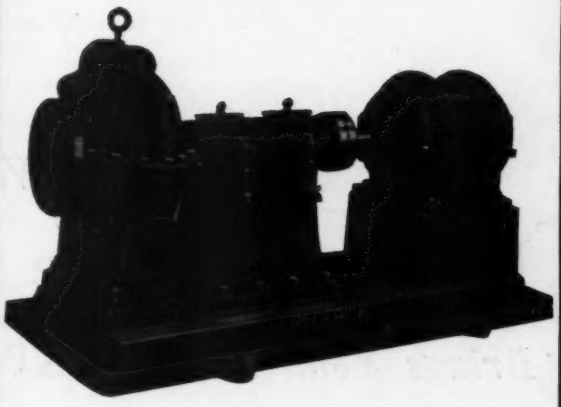
According to credible information, a large mill for the manufacture of rayon is to be erected in the vicinity of the paper mill at present being erected at Gatineau by the Canadian International Paper Company. No details as to the extent of the work to be done or the amount of capital involved are available, although it is understood that shareholders of International Paper are interested in the new plant.

Canadian Paper Industry Should Not Expand Further

Ellwood Wilson, chief forester for the Laurentide Company, thinks that it is about time to call a halt in the construction of paper mills and the addition of new machines to existing mills in Canada. They may, for the present, prosper, but he is of the opinion that the mills will soon be at one another's throats for the possession of wood. He adds that it would seem only common sense to build new pulp and paper mills according to the capacity of the forests of the Dominion.

Taking a very liberal estimate of the amount of wood cut per acre for pulp and paper of all kinds, the equivalent of 128 square miles of forest are cut over each month, or 1,536 square miles annually. As the shortest time necessary to

Frederick
• Pumps •



Single-Suction Standard Paper Mill Stock Pump

¶ Efficient pumping equipment is an important factor in keeping down production cost in a paper mill. More and more paper mills are becoming convinced that there is no better pumping equipment for this purpose than Frederick Pumps

Frederick
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The Grewin High Pressure Ventilating System

(Patents Pending)

The Last Word in Efficient

Paper Machine Cross Ventilation

Brings You: THE LAST TON OF PRODUCTION

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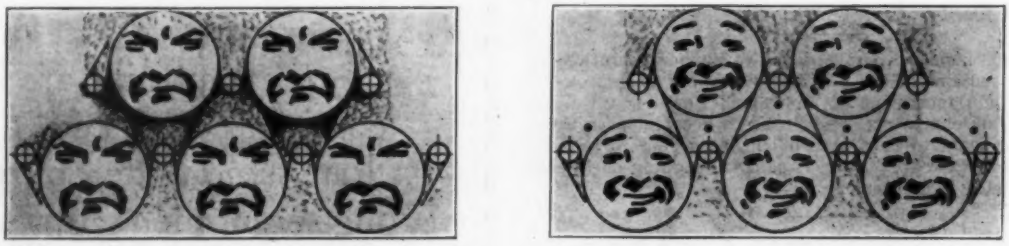
What the System Will Do for You with a Minimum of AIR, POWER and INSTALLATION COST

Without DRYER PART With



Grewin High Pressure Ventilation

AMERICAN VOITH CONTACT CO., Inc.

280 Madison Ave., New York, N. Y.

produce a second crop under the present method of cutting would be between fifty and sixty years, it is obvious that the situation calls for something more than merely "viewing it with alarm."

Rupert F. Howard, of Montreal, has been appointed manager of power sales of the Gatineau Power Company, a wholly-owned subsidiary of International Paper.

At a recent special general meeting, the shareholders of the Port Alfred Pulp and Paper Corporation ratified the administration's proposal to double the common capitalization of the company, and the shareholders have been offered the 60,000 new shares of no par value common at $25 per share, on the basis of one share of new stock for each share presently held.

The London Paper Box Company was recently incorporated in Ottawa, with authorized capital of $100,000 and head office in Montreal.

J. A. Piché, Limited, was recently incorporated to carry on a lumber business and deal in lumber of every kind, building materials, timberlands, etc. The incorporators are J. A. Piché, Wm. Lalonde and Armond Brière, all of the city of Montreal. The capital stock is $20,000 and head office is in Montreal.

The Standard Paper Box Company, Ltd., Montreal, are erecting a three-story addition to their factory and warehouse at the corner of Park avenue and Van Horne street. Good progress is being made with the work, and the building is estimated to cost $20,000.

The E. B. Eddy Company, of Hull, is making alterations in the groundwood mill, including the installation of a number of new grinders. These are now under construction on a contract awarded to the Port Arthur Shipbuilding Company, and are scheduled to be in operation at the end of the month. The new machines will be the very latest type of pocket grinder, equipped with special devices for removal of stock between pockets.

Leon Campbell, chief accountant of the Laurentide Company, for the past seventeen years, has left the company to assume charge of the accounting department of the Anglo-Canadian Pulp and Paper Company, of Quebec, of which F. W. Clarke is president and R. A. McInnis general manager. Mr. Campbell is one of the most efficient and capable accountants in the Canadian paper industry, and one of the most popular members of the Laurentide staff. His appointment carries with it a considerable degree of responsibility and is an acknowledgment of his marked ability. On the eve of his departure he was presented with a solid silver tea tray, suitably inscribed with a facsimile of the signature of the donors.

St. Lawrence Paper Mills have started up their Number 3 machine, and the erectors are nearly through with Number 4. The two new machines will bring the total capacity of the plant to 300 tons of news daily, besides the production of sulphite pulp, and thus St. Lawrence will be taking its place among the more important newsprint producers. The mill is a model of efficiency, everything has been planned and built right from the start with a view to further expansion, and it would surprise no one if the building program was again carried on in a year or two.

E. B. Wardle, chief engineer of the Laurentide Company, has sailed from New York for a world tour on the S. S. Empress of Scotland.

Walmsley to Supply Machine for Anglo-Canadian

The Anglo-Canadian Paper Company, whose mill is now under construction at Limoilou, has ordered two newsprint machines from Charles Walmsley and Co., Bury, England, the order being placed through Charles Walmsley and Company (Canada) Limited. The mill is designed for four machines, all of which are expected to be in operation by the end of 1928.

RODNEY HUNT

Water Power Equipment

Especially adapted for Paper Mills

NEW MILL TYPE

Turbine Water Wheels and Accessory Equipment

including

Canal Gates
Hoists
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Rodney Hunt Machine Co.
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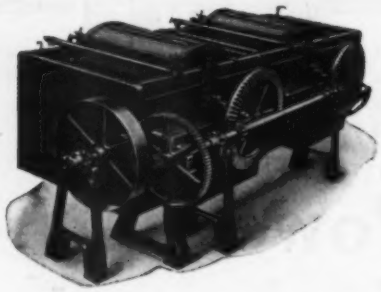
The Experience of 50 Years is of Value to You



Bleached Sulphite Washer

TWO A. D. WOOD CYLINDER TYPE

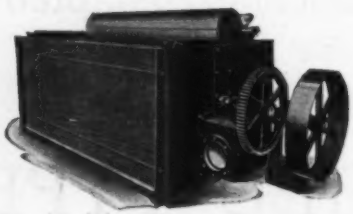
A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Our new collars ABSOLUTELY ELIMINATE losses by sealing straps. Furnished at nominal cost.

SEND YOUR ORDER AND GET THE BEST

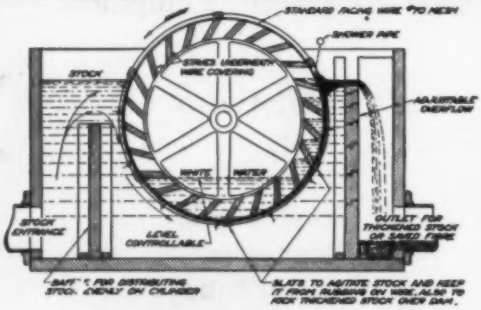


Decker and Decker Washer

We make many styles which are designed for various mill conditions and from an operating standpoint.

Our name on these machines gives you the assurance of many years of satisfactory performance.

The Walker Attachment is applicable to any model or to your present decker. It will increase their capacity 33% at negligible cost.


STANDARD FACING WIRE 90 MESH
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STAND UNDERNEATH WIRE COVERING
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WHITE WATER
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OUTLET FOR THICKENED STOCK OR SAVED FIBRE
BAFFLE FOR DISTRIBUTING STOCK EVENLY ON CYLINDER
PLATE TO AGITATE STOCK AND KEEP IT FROM RUBBING ON WIRE, ALSO TO KICK THICKENED STOCK OVER DAM

A. D. Wood Save-all

The A. D. Wood Machine as a Save-all is unique.

New sealing collars and ease of patching the wire mean maximum efficiency.

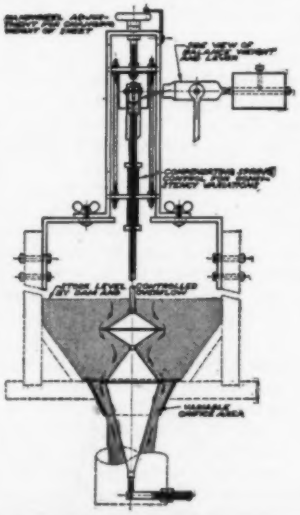
Simplicity, self-cleaning wire and continuous high capacity give satisfaction and greater savings.

We have reports of 90-95% efficiency for a four year period

Boivin Weight Regulator

FOR FOURDRINIER MACHINES

More than 50 already giving invaluable service on fast and slow speed machines, handling all kinds of stock. Install it, adjust to give desired weight, and leave it alone. Overweight claims eliminated, with big improvement in broke loss and running conditions. Handles capacities ranging from 15 to 150 tons with equal efficiency. Sensitive action and direct control.



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SERVICE - EFFICIENCY - QUALITY

See pages 344-345 in the 1926 Paper and Pulp Mill Catalogue

The machines now on order will be 234 inches wide with a speed of up to 1,400 feet per minute. There will be three straight presses with one suction wet press and a suction couch roll. The wire will be short and will be provided with an adjustable frame so as to vary the pitch as desired. A feature of the wet end, which is provided with a Van de Carr Slice, is that the fourdrinier will have no deckle. The rest of the machine will remain according to standard design, but with such improvements in workmanship as are now available at the well known Walmsley works.

The drive for the new machines has not yet been decided upon.

A federal charter has been granted to the London Paper Box Co., Ltd., with a capital stock of $100,000 and headquarters at Montreal, to carry on the business of manufacturing and dealing paper, pulp, strawboard, straw, as well as boxes, bags, packages, etc.

Good progress has already been made by Price Bros. in beginning the work necessary for the enlargement of its Riverbend mill. The addition to the plant will be completed by the end of 1927 and the two new newsprint machines will be producing paper by January 1, 1928. At that time the Riverbend mill will have a capacity of 400 tons of news a day.

Northern Timber Limits to Be Auctioned

Some timber limits located on the north shore of the St. Lawrence, east of the Manicouagan and Outarde Rivers, are to be offered shortly for lease by auction. It is understod that the limits were recently surveyed, and that the most important bidder will be the St. Regis Paper Company. This company is to start erecting pulp and paper mills at Cap Rouge, a little above Quebec City, in the spring. The extent of the area to be auctioned has not been made public as yet.

The pulpwood will be transferred by water from the north shore limits to Cap Rouge, and it is likely that the cutting will begin early in the spring. It is expected that the mills to be constructed will have a capacity of about 300 tons of news per day.

At the annual meeting of the Forest Engineers' Association, which was held in Quebec last month, the following officers were elected: President, Henri Roy, director of the School of Forest Rangers; vice-president, R. L. Seybold, of the Donnacona Paper Company; secretary-treasurer, Lauréat Garneau, engineer of the Lands and Forests Department, Quebec; councillors, Avila Bédard, Thomas Maher, O. Lussier, Henri Kieffer and Gustave Piché. The latter, however, who is chief forest engineer of the Province, declined the honor in favor of an English-speaking forest engineer, to be elected subsequently. Some fifty forest engineers connected with nearly all the pulp and paper concerns were present at the meeting.

The directors of the Dominion Engineering Works, Limited, have declared a dividend of $3 per share on the capital stock of the company, payable on January 10, 1927. The disbursement is for no specified period, and is the second payment by the company during the last year, a payment of 3 per cent having been made in July. The action of the directors, though somewhat of a surprise, merely confirmed what was generally known, namely, that the company has been doing particularly well. Only recently it secured an order for four newsprint machines for the development at Spruce Falls, Ont., an order which, it is understood, will keep the organization busy into 1928.

Wayagamack Had a Prosperous Year

With earnings from operations equal to 13.1 per cent on its old capital or $6.55 per share on its 100,000 shares of new no-par-value stock, and with its working capital position enhanced by nearly a million dollars, Wayagamack Pulp and Paper Company, in its annual financial report for the year ended November 30, 1926, produced an exhibit which was in line with expectations and which could not fail but prove pleasurable reading for shareholders.

Operations resulted in a surplus of $655,982 for the year,

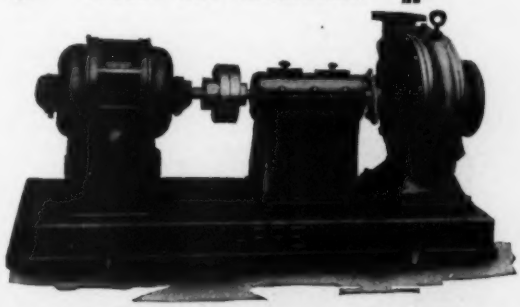
Compare it with any other Stuff Pump

The Warren Stuff Pump is designed by engineers familiar with pulp and paper mill pumping needs and built by an organization that has devoted itself exclusively to the building of fine pumps for twenty-nine years.

It handles pulped stocks up to 5 per cent and higher consistency with remarkable efficiency. Renewable case liners, perfect proportioning of passages and extra heavy construction throughout assure smooth, dependable operation throughout years of service.

Ask us to show you what you can save by installing Warren Stuff Pumps.

Write for Bulletin.



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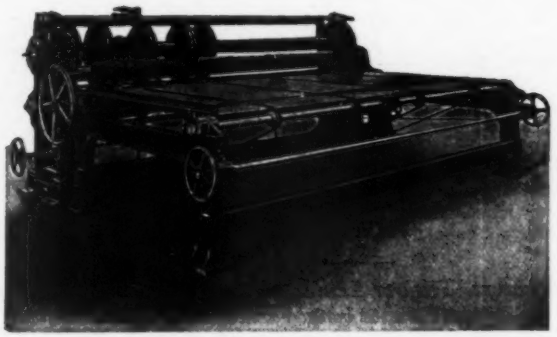
THE JOHNSON FRICTION CLUTCH

First Choice of America's Leading Builders of

Paper Working Machines

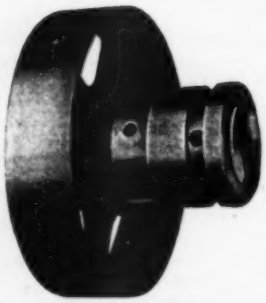
Safety Paper Tag Making Machine
The D. & D. Machine & Tool Co.
Elizabeth, N. J.

All these Machines Are Johnson Equipped



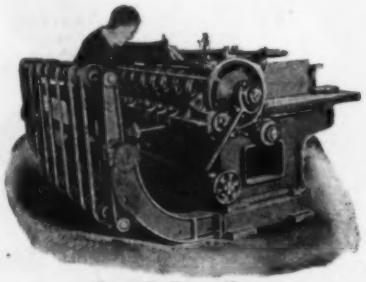
Type U Paper Slotter
The Samuel M. Langston Co., Camden, N. J.

Johnson Clutches are used effectively on thousands of paper working machines. Adapted especially for any light-powered paper machine built. The Johnson is a compact, powerful clutch of amazingly long life. Many installed 20 years ago are running yet.

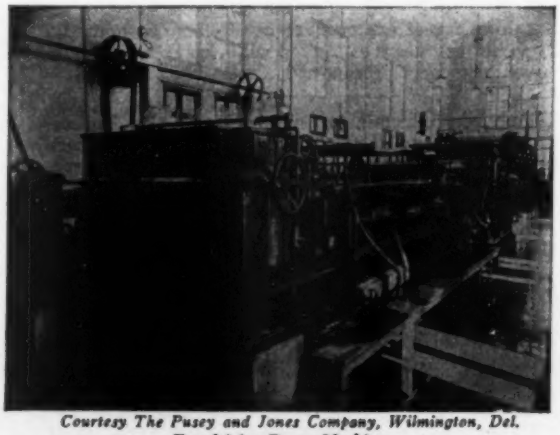


Single Clutch with
Pulley Mounted

Johnson Clutches guarantee complete control of your paper working machines. They start the machine quickly, stop it instantly, control it absolutely. Equip your paper machines with high quality, dependable Johnson Clutches. Write for our complete free clutch data.



Type VL Paper Slotter
The Samuel M. Langston Co., Camden, N. J.



Courtesy The Pusey and Jones Company, Wilmington, Del.
Fourdrinier Paper Machine
Interior view of government owned paper mill in Siam, showing Fourdrinier paper machine equipped with Johnson Clutches

Write for Catalog "P. I."

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

while profits from other sources are shown at $500,000, this evidently representing the profit from the Anticosti deal. Net working capital was increased by only a little less than the total of these two items. The special profit was shown in the profit and loss account with a like sum being transferred to general reserve.

The company's third interest in the Anticosti Corporation, represented by 20,000 no-par-value shares, is carried in the investment account at $1. President Whitehead, in his remarks, pointed out that the pulpwood on the island is conservatively estimated at 15,000,000 cords, and that it is held in fee simple by the Anticosti Corporation.

At the regular bi-monthly meeting of the Three-Rivers Paper School Committee, held on December 2nd, Principal Baillairgé reported that the rearrangement of the pulp and paper course, which will enable the student to complete the work in two years, provided he is qualified in elementary mathematics, is working out very satisfactorily. There is evident a considerable improvement in conditions at the School; the committee feels that the work is now well established, and that with greater appreciation of the opportunity both in Three-Rivers and elsewhere, the enrollment will not only be well maintained but that the ability of the students will continue to improve.

St. Maurice Increases Common Stock

The special general meeting of the shareholders of the St. Maurice Valley Corporation held in Montreal last month ratified the increase in the common stock from 150,000 to 500,000 shares. Of the newly authorized issue, 10,000 shares will be distributed to the shareholders of the Canada Paper Company in exchange for their holdings, and the St. Maurice Valley Corporation will then own all the common stock of this new subsidiary.

One of the advantages accruing to the St. Maurice Valley Corporation from the purchase of Canada Paper is a substantial supply of pulpwood that the latter has north of the St. Lawrence River and not far from the St. Maurice Valley limits of the Corporation. The Canada Paper mill in future will confine itself to wood cut on other limits near its mill and to purchases made in the vicinity.

Canipco News

Developments of the Canadian International Paper Company at the various sites along the Gatineau are proceeding apace. Work at the Chelsea power plant is scheduled to be completed about June of this year; but the number of men employed has fallen considerably, there being only about 600 at the present time, as compared with 3,000 when the work was at its height. The first unit is expected to be started up this month. At Farmers, where another power plant with a capacity of 120,000 horsepower is being constructed, there are about 1,200 to 1,500 men; while 2,500 men are rushing to completion the big newsprint mill at Templeton, the first machine of which is due to start up this month also.

At Paugan Falls, about 25 miles above Chelsea on the Gatineau River, there are already 1,000 men doing the preliminary work on another big hydroelectric power plant, and the number is being continually added to as men are released from the Chelsea and Farmers camps.

Parties are now on the ground at the site of the Des Quinze power development, in the Abitibi region. The company purchased extensive timber limits in that region and one of the conditions of the lease was that they should build a pulp and paper mill within four years.

In addition to the numerous projects which are at present under way, Canadian International Paper is said to be considering the advisability of constructing a power plant at Buckingham and a paper mill at Masson for working up pulpwood from the company's limits in the upper watershed of the Lièvre River, a tributary of the Ottawa.

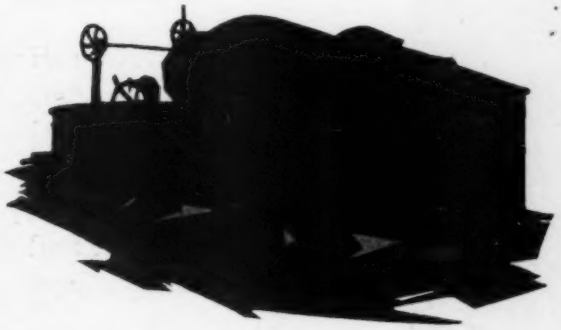
The unexpected rapidity with which winter arrived at the beginning of last month greatly inconvenienced navigation. Some 5,000 tons of newsprint, mostly from the Three-Rivers mill, were tied up on barges frozen into the Champlain canal,

Dilts

In

1926

more than ever before, the importance of having modern beater equipment was demonstrated. That is why orders for Dilts NEW TYPE Beaters were placed by so many up-to-date concerns.



A partial list of our 1926 contracts includes:

Lewis, Slocum & Lefevre Co., Inc.
Louisiana Pulp & Paper Co.
Minnesota & Ontario Paper Co.
Tumwater Paper Mills Co.
U. S. Gypsum Co.
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Howard Smith Paper Mills, Ltd.
Groveton Paper Co.
North Star Strawboard Mills
Eddy Paper Corp.
Diana Paper Co.
Port Alfred Pulp & Paper Corp., Ltd.
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Your paper is made in your beaters

Dilts
MACHINE WORKS, Inc. FULTON, N.Y.
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Tissue Winder

TWO swinging arms pivoted at the back of the main frames carry the winder shaft which runs on the drum roll. These arms have quick opening bearings for the winder shaft, and the drum roll has tight and loose pulleys.

The paper is wound as on a drum winder. A slitter shaft, arranged to ride on the paper, is fitted with flanged wheels at each end, which bear against the curved guides mounted on the side frames. Any number of slitters can be used. Write us for a quotation.

DOWNINGTOWN MANUFACTURING COMPANY
Paper and Pulp Mill Machinery
EAST DOWNINGTOWN, PA., U.S.A.

near Fort Edward, N. Y., and had to be transferred for rail shipment.

The superintendents of Canipco held their annual dinner at the Château de Blois, Three-Rivers, on December 11th. This was the fourth time that the function was held, and on this occasion the superintendents bade farewell to Manager J. A. Murray, who has now taken charge of the new Gatineau mill of the company, and welcomed the new manager, C. W. Walker, who has been transferred to Three-Rivers from the Corinth, N. Y., mill.

When Manager Murray was hurriedly sent for last month with word that there had been a serious break at Machine No. 8 of the Three-Rivers mill, he foresaw a bit of trouble ahead. Great was his surprise when, on reaching the scene of the would-be break-down, he was confronted by a large gathering of fellow employees, who had met to present him with a slight token of their friendship, on the eve of his departure for the new Gatineau mill. Frank Hyatt, assistant manager of the mill, acting as spokesman, told Mr. Murray in a few words what a lot his fellow employees thought of him, and how sorry they were to see him going to another place. He asked the surprised "boss" to accept a well appointed "cabaret" with all silver and glass trimmings, with the heartiest wishes of the givers. Mr. Murray replied in his usual frank way, and voiced his appreciation of this token of esteem on the part of his fellow employees, whom he was sorry to leave.

In connection with the erection of the mill of the Mistassini Pulp and Paper Company on the north shore of Lake St. John, it is interesting to note that this wild and sparsely-settled region was first opened up by Cistercian monks some 30 years ago. The southern, as well as the eastern and western, shores of the lake were settled at an early date; but it was only in the nineties that, at the invitation of the Quebec Government, the Trappist Monks established the first white settlement north of the lake, by the falls of the Mistassibi, a large tributary of the Mistassini. Settlers gradually followed, and now there are five flourishing parishes in the district. The Mistassini Power & Paper Co., Ltd., has announced that effective January 1, 1927, the company name has been changed to the Lake St. John Power & Paper Co., Ltd.

ONTARIO

Clean Water for Paper Mills

For some time paper manufacturers in the Niagara district complained about the soiled condition of the water which they were compelled to use by reason of dredging operations carried on in the new Welland Canal. A motion for an injunction to restrain the Canadian Dredging Company from dumping into the Welland Canal any material of such a nature as to interfere with the manufacture of certain grades of paper by the Interlake Tissue Mills, the Lincoln Paper Mills and the plant of the Provincial Paper Mills, resulting in an agreement before Mr. Justice Hodgins, Toronto, obviating the necessity of an injunction.

Mr. Hickson has taken the place of Mr. Covey as superintendent of the board mill of the Beaver Wood Fibre Co., Ltd., at Thorold, under the mill manager, John Ball.

There is a strong rumor in Sault Ste. Marie that the Insull interests of Chicago will erect a pulp mill at Michipicoten Harbor in the spring. The firm controls quite large power facilities in the district and is supplying several of the mines at Goudreau and Michipicoten with power.

The construction program of the Spruce Falls Company at Kapuskasing is well in advance of schedule. The railway to Smoky Falls has been completed and preliminary construction work is in progress at the site of the projected power dam. The plant will produce 50,000 horsepower and will be ready for operation this year. The entire output of the power plant will be used in the new pulp and paper mill. The program

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

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Industrial Lubricants of Superior Merit

Write for Samples and Prices

Special Lubricants for Paper Mill Service

The Ohio Grease Co.
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Duxbak Belting is more pliable because there's no grit in the leather

IT'S just as hard for a starchy, grit-filled belt to bend around pulleys as it is for the traditional fat man to bend over. The one produces friction and the other produces discomfort.

Many a Duxbak Belt has lived to be old enough to vote. It's just because their fibres are clean and no amount of hard running can set up friction. Ask a Schieren salesman about it—or write us.

Let us send you a copy of L. H. Hopkins' article "Group Drives More Economical for Most Conditions."

Chas. A. Schieren Company

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BELT MANUFACTURERS
22 FERRY STREET, NEW YORK

DUXBAK WATERPROOF LEATHER BELTING

calls for production of newsprint on July 1, 1928. The ultimate output of the mill will be 550 tons of news a day. The order for the four newsprint machines has been placed with the Dominion Engineering Works, Lachine, Que.

American Interests Seek Don Valley Site

Mr. R. R. H. McGregor, M.P. for South York, was interviewed in his capacity as member of the Hydroelectric Power Commission recently by representatives of certain American interests who told him that they would be ready to utilize 1,000 horsepower in a paper project in the Don Valley, in East York Township. Six hundred horsepower is expected to be developed within three months, although the application now before the East York Hydroelectric Commission is for 1,000.

Negotiations are also being made for a site adjacent to the Don Valley Paper Mills, although there is no connection between these interests and the Don Valley Company. It is understood that the project has to do with the establishment of a plant for the manufacture of papier maché goods and egg carriers from pulp.

The Canadian Cellulose Co., Cornwall, expect to enter into the production of soda pulp not later than the end of the present month. This organization is a subsidiary of the Howard Smith Paper Mills, Montreal. Work on the project commenced in May last and the initial output will be of 15 tons per day. The plant is designed so that its capacity can be readily increased whenever market conditions justify such expansion.

George Carruthers, president of the Interlake Tissue Mills and former president of the Canadian Pulp and Paper Association, has long contended that too many young coniferous trees are cut and sent out of the country for use as "Christmas trees," and, as he is an ardent exponent of conservation, his company is making artificial trees for decorative purposes. The creations, which closely resemble the natural tree, had a big sale last month.

Good progress has been made on the new fifty-ton strawboard mill of the Hinde and Dauch Paper Company, of Canada, at Trenton. The new 126-inch fourdrinier machine is very nearly installed and it is expected that the plant will be in running order in the very near future.

The reputation of the Faculty of Forestry of the University of Toronto is extending beyond the confines of Canada and is becoming world-wide if the information divulged by an analysis of the attendance for the year 1926-27 is any criterion by which to judge. Nine of the 51 students registered in Forestry this year have come from other countries: three are from England, two from the United States, and one each from Finland, Holland, Norway and Trinidad.

At Iroquois Falls

Hugh D. Hennessy, superintendent of logging of the Abitibi organization, while on a business trip to Montreal developed pleuro-pneumonia which carried him away very quickly. Mr. Hennessy, who was twenty-nine years of age, had been married but a couple of months. He was liked and esteemed by all who knew him, and his loss is keenly felt at Iroquois Falls as well as in the camps which he directed.

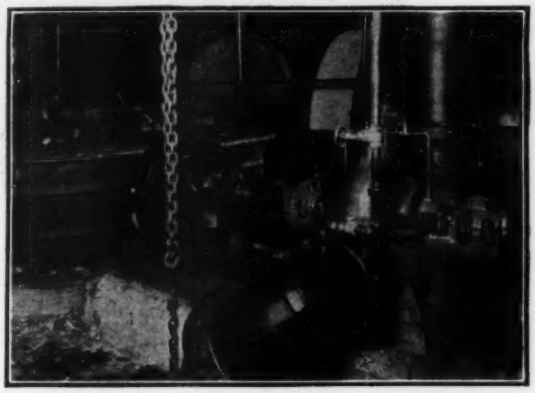
Alec Dewar, editor of the "Broke Hustler," house organ of the Abitibi Power and Paper Company, has been honored by being re-elected president of the Northern Ontario Associated Boards of Trade.

At a recent meeting of the board of directors the dividend rate on the common stock of the company was increased from 4 to 5 per cent per annum, showing that the future is looked forward to with confidence in spite of the large increase in tonnage scheduled to come into operation during the course of 1927.

Vickery felt conditioners have been put on No. 1 and No. 6 paper machines, one conditioner for each press. The work was done on Sundays, one press being equipped each week.

Of the 105 men who have been working in the mill and, therefore, subject to accident hazard, for five years or more, sixty-five per cent have not been injured within the five years.

Plan Now With "ECONOMY" To Reduce Water Handling Costs in 1927



An Economy Centrifugal Pump Cutting Water Handling Costs in a Paper Mill

Water is one of your biggest material handling problems. With an average 125 tons of water used to every ton of paper made, even slight percentage savings soon more than pay the cost of new over old inefficient equipment.

ECONOMY CENTRIFUGALS have a known record of savings in paper mills that mount as high as 23%. Are you sure that your water cost is down to a minimum basis?

Economy Engineers are responsible for construction and design that enable Economy Centrifugals to be marketed on a basis of reasonable first cost with a length of life that places them ahead of all others when both first and final cost is reckoned with.

Our Sales Staff, available in offices throughout the country, will co-operate with you to reduce your water handling costs.

Write for Bulletin No. 404 on Centrifugal Pumps and Bulletin No. 403 on Vacuum Pumps

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Pumping Machinery Co.
Centrifugal Pump Specialists
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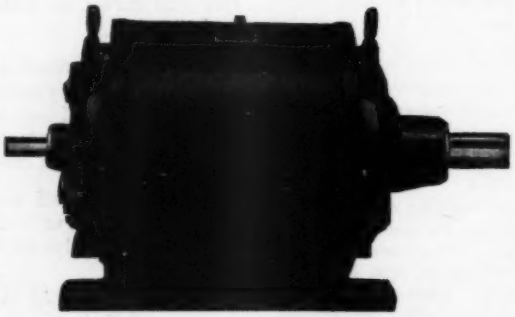
Double Type Reducer, driving continuous cloth dyer. Motor Speed 1200 R.P.M. Reduction Ratio 44 to 1

Standard Equipment for Many

So successful has the Jones Spur Gear Speed Reducer proven under unusually severe operating conditions that it has been adopted by many manufacturers as standard equipment.

Simple in design, foolproof in construction, positive in operation, economical in first cost and upkeep, it represents a notable engineering achievement in speed reduction practice.

In cement mills, mines, foundries and industries of all kinds—on conveyors, agitators, stokers' gas producers, tables, water screens, dry kilns—in short, wherever electric motors are used to drive slower moving machines, you will find Jones Speed Reducers operating quietly and steadily.



Reducer catalogue Number 26 will give you complete information about this safe and more efficient method of stepping down motor speeds. Write for it.

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Main Offices and Works: 4436 West Roosevelt Road, Chicago

Branch Sales and Engineering Offices: — *New York, Cleveland, Milwaukee, Pittsburgh, Buffalo, Detroit, Birmingham, St. Louis, Cincinnati*

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The King-Knight Company, *San Francisco, Los Angeles, Seattle*

Jones Speed Reducers

and Power Transmitting Machinery

A number of these men have been considerably longer than five years in the employ of the company without sustaining any accident.

Announcement was made a few days ago by L. R. Wilson, vice-president and managing director of Abitibi, that the company has acquired, through a subsidiary company, the entire undertakings, properties and assets of the Mattagami Pulp and Paper Company, of Smooth Rock Falls, which is about 60 miles from Iroquois Falls. The Mattagami Company was just recently discharged from bankruptcy, but G. T. Clarkson, the former receiver, will continue in charge for a few weeks, pending the completion of the necessary legal formalities in connection with the transfer.

The Mattagami mill now makes about 200 tons of sulphite daily, one-half of which is bleached and the remainder easy-bleaching, and it will continue to produce these grades of pulp, which find a ready market in the United States. Financial details of the deal are not yet available, but it is understood that the newly acquired enterprise will be conducted as a subsidiary by Abitibi. According to I. W. Killam, president of the Royal Securities Corporation, who a few months ago purchased the Mattagami assets at public auction for $7,250,000, the first mortgage bondholders will be paid off in full with accrued interest, while the debenture holders will receive about 112 to 114, that is, par plus 12 to 14 per cent on account of arrears of interest. Creditors will receive, he stated, 25 per cent of their unsecured claims.

F. N. Youngman, formerly employed at the Interlake Pulp and Paper Mill division of the Consolidated Water Power and Paper Company, of Appleton, Wis., has resigned as manager of the Port Arthur mill of the Thunder Bay Paper Co., a subsidiary of the Consolidated Water Power and Paper Company.

For some time past, the Lincoln Pulp and Paper Co., of Merritton, has been concentrating on an accident prevention campaign, with most gratifying results. Since the beginning of 1923 until the beginning of last year, never a month passed without a lost-time accident being recorded. On September 8th last began a 76-day period, with an exposure of hazard of approximately 150,000 hours, during which not a single lost-time accident was registered.

At a recent special meeting of the Port Arthur city council, an agreement was passed with the Thunder Bay Paper Company, covering the erection of its paper mill, and a by-law was prepared to submit the agreement to the rate-payers for ratification at the municipal elections this month. This includes a deed whereby the Parks Board will sell to the company the acreage it requires. The agreement also provides for the construction of a paper mill having a capacity of 400 tons of newsprint per day, with the extra provision whereby the firm agrees to co-operate with the city for the treatment of any fluids which might contaminate the city's water.

The Fort William Pulp and Paper Company, of Fort William, expects to have its new 75-ton sulphite mill in operation by the end of the month. The plant cost about $1,000,000. It has been built to take care of additional newsprint machines which are expected to be installed in the not distant future, the present capacity being rated at 160 tons of news per day. The boiler plant that is being installed is equipped to burn pulverized coal, which is an innovation for that part of the country.

The installation of the new machine in the Port Arthur division of the Provincial Paper Mills is proceeding rapidly under the direction of Mr. Smethurst, of Charles Walmsley and Company, Bury, England. The groundwood mill of the company, which has a capacity of 35 to 40 tons a day, will shortly be increased to 100 tons, while additions are being made to the finishing room, the beater room and the wood room.

While Ontario forests were visited last year by 1,105 fires, only 54 less than in 1925, the general efficiency of the forest aeroplane patrol and new fire fighting methods employed by the government kept the burned acreage down to 82,611, the

This Is All You Need to Open or Close a Darling Valve

COMPARISONS favor Darlings. Take it from any slant you like—ease of operation, long life, accessibility, quick repair or ultimate cost.

Men of wide experience in paper industries—men who have made a thorough study of valve performance under the most trying conditions—find Darlings most economical and most reliable in service.

Write for details of design and construction.

DARLING VALVE & MFG. CO.
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DARLING
GATE VALVES

Hytor superiority affirmed

by ever-growing number of users

Because of the superior service they are giving in removing condensation and air from flat boxes, dryers, suction rolls, and similar equipment, Nash Hytor Vacuum Pumps are being used in an ever-growing number of mills.

The illustrations are typical installations—we could show hundreds of others.

This increasing demand for Nash Pumps is undisputable recognition by paper mills everywhere of the marked excellence of Nash Pumps and the service back of them.

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Mr. G. H. Gleason, Nottingham Bldg., Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., 600 Ry. Exch. Bldg., Chicago, Ill.

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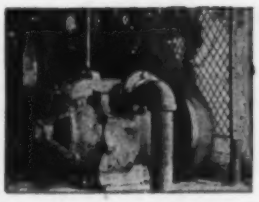
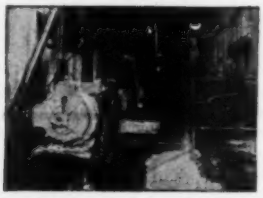
VACUUM PUMPS AND COMPRESSORS





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If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. BOSTON, MASS.

lowest in the history of the province, whereas in 1925, 187,497 acres were laid waste.

The name of the Cellucotton Products, Limited, Niagara Falls, has been changed by supplementary letters patents to The Kotex Co. of Canada, Limited.

Porritts and Spencer, a branch of an English firm manufacturing blankets and felts, have awarded a contract for a $35,000 extension to their Hamilton plant. The company claims to be the first English firm to establish a branch in Hamilton, and their export business at the Canadian end has been so good as to fully warrant the extension decided upon.

Link-Belt Limited is planning a new factory on a three-acre site which it recently purchased at the corner of Easter avenue and Leslie street, Toronto. It is reported that the company will first build a factory for the manufacture of chains, and will later add other units, including machine shop and foundry. The chain factory will be a three-story building, 80 by 235 feet, of reinforced concrete or mill type.

MANITOBA

Delay has been encountered in getting under way the new mill of the Manitoba Paper Company, at Pine Falls. Parts of the new equipment were damaged in transit causing considerable delay. The new mill was scheduled to come into operation on December 1st, but now it is expected to start up about the 15th of this month.

The Dominion Government, it appears, is going to meet with some opposition in its announced purpose to grant an additional pulpwood concession in Manitoba to the Manitoba Paper Company without consulting the Manitoba Government. Manitoba's natural resources are still controlled by the Dominion Government, although in the natural order of things what is left of them is expected to be handed over to the province. Consequently, the province asserts its right to a voice in the present disposal of any part of them.

Potential Paper Mill Sites

According to the Industrial Development Board of Manitoba, the province possesses three outstanding potential power and pulp mill developments, which are at Pine Falls, Grand Rapids and White Mud Falls. A group of explorers have blazed a trail from Gypsumville to Grand Rapids, where they are prospecting for undeveloped pulpwood areas upon which to establish new pulp and paper mills.

Developments at Grand Rapids, according to the Free Press, of Winnipeg, are assured in the near future by eastern interests, who are prepared to spend upwards of $15,000,000 in the construction of a pulp mill and power development in this area. The investment is contingent upon transportation being secured from the proposed site, through the territory between Lakes Winnipeg and Manitoba, and connecting with existing lines now diverging from Winnipeg. Construction of a railway through this territory is dependent upon the tonnage that would be available in the territory adjacent to the line. Tonnage from the mill itself it is contended, would not be sufficient to support a line, and development of tonnage in this area would largely depend upon the extent of agricultural land that could be settled.

More Paper Mills Wanted in Manitoba

Assurance was given a civic and business deputation from Winnipeg, which waited on Hon. Peter Heenan, federal minister of labor, that he would support the proposal of the public bodies for the establishment of two more pulp mills in Manitoba. He said that he would take the matter up with Hon. Charles Stewart, minister of the interior, at Ottawa, at an early date.

Mayor Webb of Winnipeg stated that what was wanted

The head is flat, sinks beneath the surface of the felt without cutting.

Prongs shaped so rivet can be sunk and clinched in one operation.

The prongs clinch and sink beneath the surface of the felt.

No metal comes in contact with the paper.

Made from the same high grade materials as Crescent Rivets for belt joining purposes.

A New Kind of Job for a New Style Rivet!

A Crescent Service on Dryer Felts

The rapidly increasing use of a riveted seam in Dryer Felts has shown us a way to extend Crescent service in Paper Mills. Working in conjunction with a prominent manufacturer of Dryer Felts, we have produced a new style *Crescent Rivet* which is ideal for this kind of work.

Made by the Crescent Belt Fastener Company means you are assured of satisfactory service—because a Crescent product is never offered for any work until it has been tried and proven itself better than the former best.

Write for special data on the subject

CRESCENT BELT FASTENERS

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247 Park Avenue **New York, N. Y.**

NO FELT MARKS—
With Fitchburg Felts

THE smooth, tightly-woven surface of all Fitchburg Cotton Dryer Felts insures paper free from felt marks.

¶ The finest papers—bonds, ledgers, fine writing—are made better and smoother when Fitchburg Felts are used.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 210 inches in width.

¶ Fine faced felts for fine papers. For coarse papers use "Triune" three-ply felts—they're dependable.

FITCHBURG DUCK MILLS
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EXCLUSIVE MAKERS OF
Paper Makers' Felts

Have You Run Them?
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Give Us a Trial
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"BEST AT EVERY TURN"

"TWENTY TIMES FASTER THAN BY HAND"
For lifting paper rolls, removing calender rolls or raising Fourdrinier wires, use ROEPER Type "R" Electric Hoists—With or without Trolleys—Speeds up to 40 feet per minute—Send for Bulletins.

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PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 48 inches

WYCKOFF WOOD PIPE
The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for White Water, Paper Stock, and Acids that can be obtained
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1855 Elmira, N. Y., U. S. A. 1926

from the federal government is concessions on a parity with those allowed the Manitoba Pulp and Paper Company so that a new company would be on an equal basis in the competition for timber, thus bringing about better competitive conditions for settlers and farmers having pulpwood for sale. This action, said the Mayor, is being taken to further the early development of the natural resources of the province, one of the most important of which is timber. Fires are destroying the latter and bringing in no revenue and it is desirable that the wood should be used for industrial purposes.

After considering the proposition for some months, Detroit capitalists have decided to erect a $250,000 wrapping paper mill and boxboard factory at St. Boniface. Mr. Brownell, one of the originators of the plan to start the manufacture of coarse paper from waste paper stock, spent a few days recently in Detroit, where he conferred with those who are behind the project. Complete machinery for the mill has been purchased and the plant will be operated by the Great West Paper Mills, Ltd., of which Charles K. Wood, of Detroit, is president.

Charge That Pulpwood Rates Are Fixed

M. J. Stanbridge, representing the small pulpwood owners of Manitoba, appearing before a civic committee in Winnipeg recently, charged that the Backus and the Spanish River interests had combined to pay $6.25 per cord for pulpwood to Manitoba settlers and farmers. He added there was no competition for wood within a distance of 100 miles of the new newsprint mill of the Manitoba Pulp and Paper Company, at Pine Falls.

The civic committee is asking the city council of Winnipeg to join in a request to the Dominion Government not to accede to the request of the Manitoba Pulp and Paper Company for an additional selective pulpwood area until the approval of the Manitoba Government has been secured. Mr. Stanbridge contends that the company has already secured an area twice as large as is necessary from which to select its 5,000,000 cords of wood.

BRITISH COLUMBIA

Frank F. Sullivan, general engineer for Crown Willamette Company, has been transferred to Ocean Falls as assistant manager. It is understood that plans will be made while he is there for enlargements of that plant, which now has 4 machines making 250 tons of paper per day. The Yankee machine, which was built in England and which blew up some months ago, is now being rebuilt. The new equipment is en route and the old left from the wreck is being strengthened. Jess Harress, paper maker, of West Linn, Ore., is at Ocean Falls helping on production changes. He was located there for many years as chief paper maker.

The Hygrade Corrugated Products, Limited, of London, Ont., have established a factory in Vancouver to accommodate their western business. The branch will be known as the Canadian Boxes, Limited, with a capital of $200,000, and has been partly financed by Vancouver investors, the remainder of the stock being held by the parent company.

The Westminster Paper Company, of New Westminster, is adding equipment for turning out paper napkins and paper towels. The machines will be electrically driven and the main paper machine has been altered to conform with the latest equipment.

NEW BRUNSWICK

The reports concerning the new Fraser newsprint mill in New Brunswick continue to circulate, although the officials

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

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Starch

DON'T WORRY OVER WEIGHTS!

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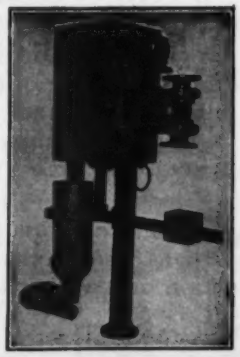
Used Wherever Paper is Made



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Agencies in Principal European Countries

TRIMBEY MACHINE WKS.
Glens Falls, N. Y.

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LAYNE WELL SYSTEMS!

Pulp and Paper Mills Throughout the Country Find the Layne Method a Profitable One

A Layne installation in the plant of Hammond Bag & Paper Co., Wellsburg, W. Va., has been giving continuous service for 43 months without one cent for repairs.

A Layne System will do the same for you. Let our engineers investigate your requirements.

Layne & Bowler Mfg. Company
MEMPHIS
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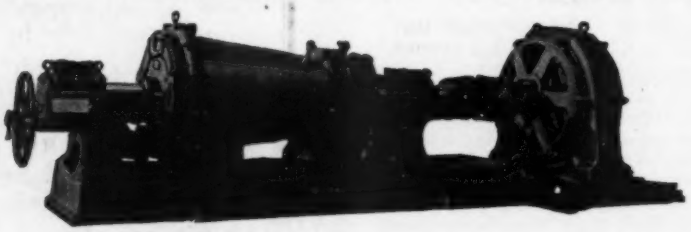
A JORDAN ENGINE *for* EVERY PURPOSE

Direct Connected Motor Driven Jordans



Six Sizes:—
Baby Jordan
Pony Monarch
Monarch
Mammoth, Jr.
Mammoth
Bull Dog

DURING the past two years, over 80% of our Jordan output has been of the Direct Connected type.

Our Type "D" Jordans are particularly adapted to direct motor drive because of their sturdy construction and the design of our couplings and motor bases permits ample adjustment to insure full wear of Jordan plug and shell knives.

Paper Mill Engineers recognize more fully each day the advantages of Direct Connected units. Greater production and a finer quality of stock can be obtained and, because the speed of a motor is inherently uniform, a maximum quantity of a given grade of stock can be produced. Then, too, through the use of meters, the finishing point of the stock can be accurately indicated and the degree of contact of the Jordan knives can be determined more readily than when the "feel" of the operator alone is relied upon. Because belt pull is eliminated, the undue wear on bearings and eccentric position of the plug, so often found in Belt Driven units, is avoided.

Specifications and Prices Furnished on Request

THE NOBLE & WOOD MACHINE CO. Hoosick Falls, N. Y.

For list of our entire products, see page 387 in the 1925 Paper and Pulp Mill Catalogue

of the company have held aloof from definite statements as to where the mills will be built.

A. H. White, chief engineer of the International Paper Company, New York, Major Brace, of Fraser-Brace Limited, and J. W. Brankley, general manager of the Dalhousie Lumber Company and of the Miramichi Lumber Company, two International Paper subsidiaries, were in Dalhousie recently. The visit naturally resulted in rumors to the effect that International Paper would build its projected newsprint mill at Dalhousie. It is said that, as a result of a survey of the water supply, it has been ascertained that more than enough water for the requirements of the proposed mills is available at this site.

The survey of the Meductic Rapids on the St. John River for the purpose of determining the possibilities of the locality for hydroelectric development is progressing. The formation of ice on the river has made it possible to carry on part of the work more readily. The survey is likely to be finished towards the end of this month. The establishment of a pulp and paper industry on the middle St. John may follow development at this site.

NOVA SCOTIA

While no announcement has been made as to whether or not the Scott Paper Co. will manufacture paper in Nova Scotia, there seems little doubt that it will include the production of paper in the plant that it will build somewhere in the province. Indications are that the mill will not be erected at Caledonia on or near the site of the pulp mill which was burned down last summer. Whether or not the company has decided on a site for the new plant has not been disclosed. Executives of the company have toured the province looking over numerous sites, the advantages and disadvantages of each being minutely investigated, and it is expected that a start in construction will be made in the spring.

British Industry Fair—1927

The British Consul-General of Chicago has announced that the dates for the British Industries Fair for both the London and Birmingham sections have been set for February 21 to March 4, inclusive.

The paper exhibits are confined to the London branch and are reported to be well worth a visit.

The British Government grants genuine buyers free passport visas, a formality which costs the general public $10.00, and it may be assumed from this concession that Britain is willing to be particularly hospitable to American business visitors.

Land Owners Combine to Protect Forests

Protective measures adopted by International Paper Co., in conjunction with other owners of woodlands, have curtailed fire losses on its holdings in the St. Maurice Valley to nominal size. International Paper owns 3,000 square miles of timber limits in this section.

An association of the owners of 16,000 square miles of timber limits in the St. Maurice Valley has erected eighty steel observation towers, 65 to 80 feet in height and laid 1,600 miles of telephone wires. Fire observers are posted in these towers throughout the dry season and any fire can be seen from two of three points so that it can be located immediately and reported. The telephone lines are also used for communications by the various companies in wood-cutting operations. The association employs a manager, 35 inspectors, chief and assistants, 80 fire guards in towers, 100 patrols and fire guards, 50 telephone linemen and 5 switchboard employees.

During the past season, only 90 acres in this district were burned. Approximately 33,000 persons visited the "bush" of the St. Maurice Valley during 1926.

Checking Up!

ABOUT this time of the year most of us are checking up on our progress for 1926—and if we're onto our jobs we closely scrutinize all of the leaks in our businesses.

If you find your proportion of "seconds" has been running high, consider the increase in quality and the cutting down of "seconds" possible by proper filtration of the water entering your paper.

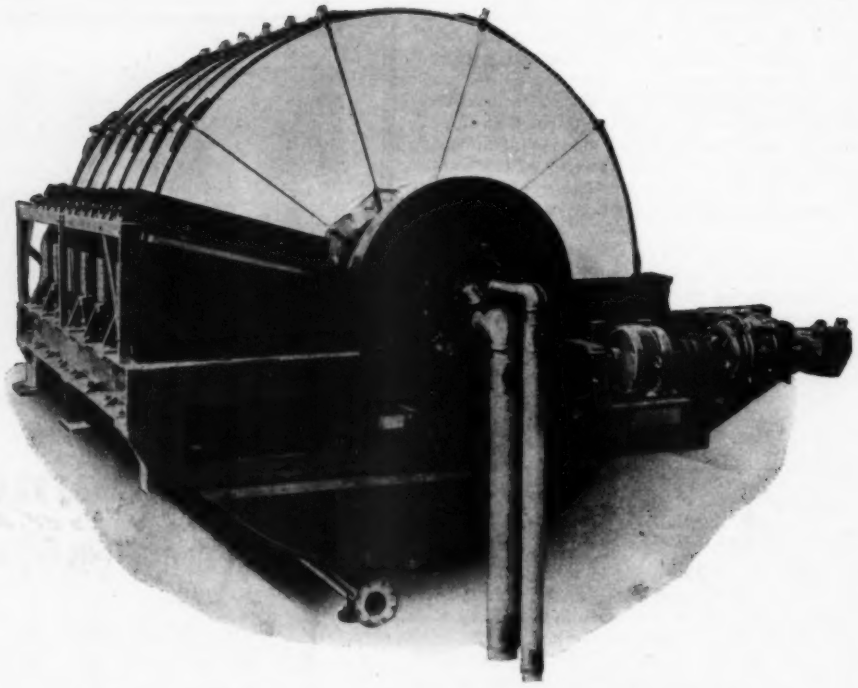
Adequate filtration equipment is of vital importance to you, so if you have had delays in operation due to dirt in water or if you are getting too many "seconds" we suggest that you ask us to send an engineer to help you check up on your filtration needs.

Catalogs on Request

NORWOOD ENGINEERING CO.

Florence, Massachusetts

FILTERS SUPER-CALENDERS PLATERS
GLASSINE-CALENDERS DUSTERS BRUSHING ENGINES



Standard on United Filters

The United Filters Corporation uses James Speed Reducers as standard equipment on their Automatic Continuous Filters—they know the economy of buying the best, to eliminate costly shut downs and repairs.

It is the unusual application, as well as the usual—any drive that requires assured performance — that has made James the standard of speed reducer excellence.

The gear members are all centrally balanced, moving in the same direction through an oil bath. Vibration and friction are reduced to a minimum. Balanced tooth pressure, elimination of side and overhanging strain and a pure torque assure more efficient, more durable and more positive action.

Get the facts about James Planetary Speed Reducers. Take advantage of our free engineering service.

A type for every drive, Spur, Herringbone and Worm —to drive horizontally, vertically or at an angle.

Send for Catalog No. 99

D. O. JAMES MANUFACTURING COMPANY
1120 West Monroe Street, Chicago, Illinois

D.O.JAMES

NEW YORK CITY NEWS

Owing to the sudden death recently of Frederick W. Westlake, vice president and treasurer of the Perkins-Goodwin Company, paper and paper mill supplies dealers of 33 West Forty-second street, New York, there has been a change in the officers of that organization. John Atkins, previously secretary of the company is now vice president and treasurer, and William H. Anders is now secretary. Mr. Anders is in charge of the wood pulp department of the company. Louis Calder is president of the organization.

Paper Stock Dealers Elect

Joseph P. Gaccione, of Gaccione Bros. & Company, Inc., was elected president of the New York Association of Dealers in Paper Mills Supplies, Inc., whose membership comprises all of the leading concerns in New York City supplying raw material to paper mills, at the annual meeting of that organization on December 8. Mr. Gaccione succeeds Charles R. McBride, of the Wilson Paper Stock Company, who served several terms as president.

Joseph Benedetto, of D. Benedetto, was re-elected vice president; Walter H. Martens, of George W. Millar & Company, Inc., was again chosen treasurer, and Alfred J. Moran, of A. J. Moran & Company, was re-elected secretary. The Executive Committee for the ensuing year consists of the above four officers and Louis S. Darmstadt, George Carrizzo, Michael Stramiello, J. J. Patricof, Charles R. McBride, Joseph Carrano, Charles Mastronardi and Anthony S. Gaccione.

It was announced at the meeting that the annual banquet of the association will be given on the evening of February 23, 1927, at the Hotel Astor, New York, this date being during the week the American Paper and Pulp Association holds its annual convention in New York.

H. S. Chalfant Incorporates

Herman Scott Chalfant announces to the trade that he has incorporated his business for the general distribution of paper and wood pulp, and that the new firm will operate under the title of Herman Scott Chalfant, Inc. For the present, the concern will retain its old quarters in the Canadian Pacific Building, 342 Madison avenue, New York, where it has operated for the past six years. Mr. Chalfant is president and treasurer of the incorporated company, and will continue to handle newsprint and pulp. His many years' experience in the manufacture of newsprint qualifies him as an expert.

Joseph H. McCormick, formerly president of the American Paper Mills Corporation, joins the concern as vice president. Mr. McCormick is one of the most widely known and popular salesmen in the industry, and has had many years' experience in the manufacturing end of the trade before associating himself with some of the leading distributors. He will continue to sell those lines in which he has built up such a wide and enviable reputation.

Edwin D. Peck, secretary of the company, is in charge of the book paper department. Mr. Peck has been associated with Mr. Chalfant since 1922, and also has had some years of experience in the manufacturing branch of the industry, as well as in the distribution of paper.

Warren Co. Acquires Mill

The Warren Manufacturing Company, of 342 Madison avenue, New York, with mills at Riegelsville and Milford, N. J., has acquired the plant and assets of the New Jersey Wax Paper Corporation, of Passaic, N. J., as of January 1, 1927. This business will be conducted as a department of the Warren Manufacturing Company. Benjamin H. Ballard, formerly treasurer of the New Jersey Wax Paper Corporation, who has joined the Warren organization, will be in charge. All communications for the New Jersey Wax Paper Corporation should be addressed to the Warren Manufacturing Company at 342 Madison avenue, New York.

The combining of this new equipment and personnel with the

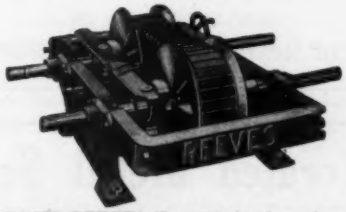
Photo shows a REEVES Transmission which operates a 79-roll loft drier at the Gilbert Paper Co., Menasha, Wis.

Accurate Control for Uniform Production

ANYTHING from tissue to wrapping paper can be made on machines driven by the REEVES Variable Speed Transmission, and each grade of stock will be uniformly high-grade. The REEVES gives the fine, steady, accurate gradations of speed which enables you to run your machinery at just the right speed always for any different weight.

On fourdrinier and cylinder machines, on cutters, winders, slitters, and on pasting machines, the REEVES Transmission will eliminate waste and increase your production efficiency. Our catalog A-66 gives full information about the uses and advantages of the REEVES in the paper industry. Write for it today.

REEVES PULLEY COMPANY
Established 1887
COLUMBUS, INDIANA



THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
Variable Speed Transmission

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

99 CHAUNCY St. BOSTON, MASS.

Sole Selling Agents

Brandon "TRI-UMPH" 3-Ply Dryer Felts

Up to 245" in Width

CAREFUL, INTELLIGENT, QUICK SERVICE

Ham Feltz sez:

"Shoppin' around to get the best wet felt you kin find is one way to cheat the coal pile. It's cheaper to let the water run through a High Grade Hamilton wet felt than to sweat it out of the paper with high cost steam. Check it up as I've done and yuz'll find it a case of only dimes against dollars."

Hamilton Felts

SCREEN PLATES *and* DANDY ROLLS

Watermarking a Specialty

Central Manufacturing Co.

The Quick Service House

KALAMAZOO MICHIGAN

Remember

WM. A. HARDY & SONS

FITCHBURG, MASS.

Originators and Oldest Manufacturers

OF THE

Cast Bronze Screen Plate

ALSO SPECIALIZE IN

Acid Resisting Digester Parts

UNION SCREEN PLATE CO.

Fitchburg, Mass., U. S. A. Lennoxville, P. Q., Canada

UNION BRONZE SCREEN PLATES

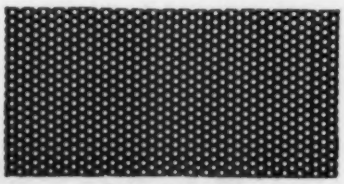
(Best phosphorized Cast Metal)

Old Plates RECLOSED and RECUT to accurate gauge
UNION BRONZE SCREWS for Screen Plates
Immediate Delivery of the Largest Orders. Satisfaction Guaranteed

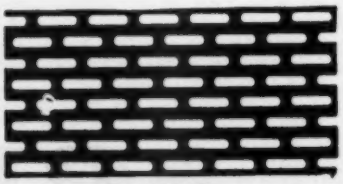
The Witham Screen Plate Fastener, Patented

THE ORIGINAL THE BEST

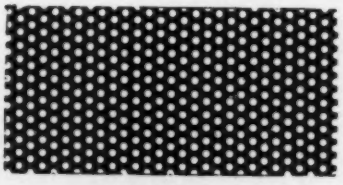
Perforated Metal Screens for Pulp and Paper Mills



.065 inch round



⅛ x ¾" Slots



3/32 inch round

Steel, Copper, Brass, Bronze and other alloys punched for Centrifugal and Rotary Screens, Pulp Washers, Drainer Bottoms, Filter Plates, etc.

CHARLES MUNDT & SONS 57-65 Fairmount Avenue, Jersey City, N. J.

present facilities of the Warren Manufacturing Company will result in a most modern and complete waxed paper plant for the production of both plain and printed Riegel's Waxed Glassine.

William Combs Ridgway

William Combs Ridgway, a prominent lawyer of New York City, long secretary of the National Paper Trade Association and widely known among paper jobbers and manufacturers, died in the Lenox Hill Hospital, New York, on December 28 of a heart collapse. He had undergone an operation there three weeks previously, and was believed to be recovering, so that his death, coming so suddenly, was a severe shock to his large circle of friends and associates in the legal profession and the paper trade.

Mr. Ridgway was 49 years of age. He was a member of the law firm of Ridgway & Slote, with offices at 41 Park Row, New York. He resided in Englewood, N. J. He is survived by a widow, Mrs. Joan McBride Ridgway; a son, William C. Jr., who is a sophomore at Princeton University; a daughter, Ruth, a student in the Dwight School at Englewood, and his father, Charles D. Ridgway, of Jersey City, N. J., with whom he was in partnership.

Mr. Ridgway was graduated from Phillips Academy, Andover, in 1895, and three years later from Columbia Law School, where he became a member of the Zeta Psi Fraternity. Besides gaining an enviable place in the legal world, he had served as secretary of the National Paper Trade Association for about 20 years.

The funeral was held on December 30 in the First Presbyterian Church, Jersey City, and was attended by many members of the paper trade from New York and other cities.

John Doolan

John Doolan, president of the Albany Mill Supply Co., Inc., dealers in papermakers' supplies formerly of Albany and Troy, N. Y., and now of 41 Park Row, New York, died at the home of his son in Brooklyn, N. Y., on December 15. Mr. Doolan was a pioneer in the waste paper industry and a well known visitor at the paper mills throughout this country and Canada for nearly 50 years. His rugged personality and genial manner won for him the friendship of many fine men in the paper manufacturing industry as well as in other walks of life, and his passing will be noted with genuine regret by a host of friends and acquaintances in the various cities and towns so frequently traveled by him.

Mr. Doolan was born in South Hadley Falls, Mass., on Easter Sunday, March 23, 1856, and lived there until he was two years old when his parents returned to Ireland with their young son and he remained with them until he was 13 years old. He then came alone to this country and found work in the old Glasgow mill at South Hadley Falls where he was employed until he ventured into business for himself at the age of 20, a few years afterward moving to Springfield, Mass., where he bought the Dickinson property on Worthington street, standing on part of the site now owned and occupied by the Hotel Worthy. At this location he carried on an extensive rag and waste paper business, and entered into the social and political life of his adopted city. After a disastrous fire he left Springfield for Albany, N. Y., and established the Albany Mill Supply Company, Inc., maintaining a warehouse in Troy. In 1922 the business was moved to New York City. Mr. Doolan retired from active interest in the business on his seventieth birthday. He is survived by two daughters and a son, Thomas H. Doolan, of New York, his successor in business.

An involuntary petition in bankruptcy was filed on December 8 against R. F. Hammond, Inc., wood pulp and paper importers and merchants of 342 Madison avenue, New York, by the Equitable Trust Company on a claim of $23,800; Castle & Overton, Inc., $2,341, and William Hartmann & Company, Inc., $2,799. Ely Rosenberg was appointed receiver, under $25,000 bond, by Judge Bondy. Later the company filed schedules in bankruptcy, placing liabilities at $209,762 and

"Felts are quickly cleaned and freely rinsed ---*with OAKITE*"

SO ONE of our paper mill customers tells us! And this is the way they did better cleaning. After the felts are slackened, roped and turned over, they saturated them with an OAKITE solution. Then run for about ten minutes. Rinsed with cold water sprays and hose. Turned over, restretched, and ready for operation. All in *shorter time* and with *better cleaning and rinsing results* than when soap and soda ash were formerly used.

OAKITE completely frees felts of sizing and foreign matter. Leaves them SOFT—as they should be. Makes them *last longer*.

You, too, can benefit by using the OAKITE method. Call in our Service Man. Find out how he can help you. No obligation.

OAKITE IS MANUFACTURED BY
OAKITE PRODUCTS, INC., 16a Thames St.,
NEW YORK, N. Y.
(Formerly OAKLEY CHEMICAL CO.)

Oakite Service Men, cleaning specialists, are located at

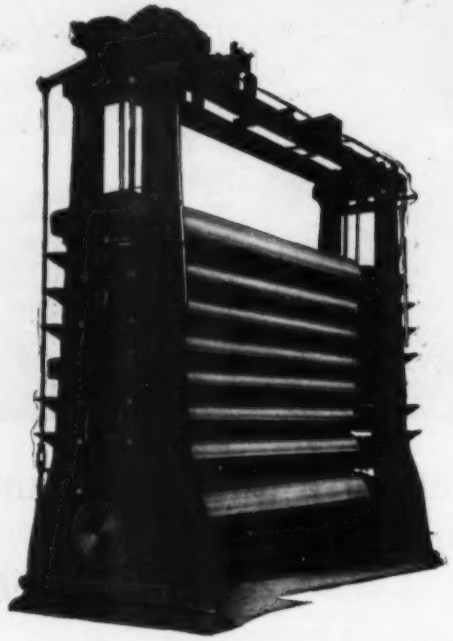
Albany, Allentown, Pa., *Atlanta, Ga., Altoona, Pa., Baltimore, Bingham, Ala., *Boston, Bridgeport, *Brooklyn, Buffalo, Camden, Charlotte, N. C., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, *Denver, *Des Moines, *Detroit, Erie, Flint, Mich., Fresno, Cal., *Grand Rapids, Harrisburg, Hartford, *Indianapolis, Jacksonville, Fla., *Kansas City, Los Angeles, Louisville, Ky., *Milwaukee, *Minneapolis, *Montreal, Newark, Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Providence, Reading, *Rochester, Rockford, Rock Island, *San Francisco, *Seattle, *St. Louis, South Bend, Ind., Springfield, Ill., Syracuse, *Toledo, *Toronto, *Tulsa, Okla., Utica, *Vancouver, B. C., Williamsport, Pa., Worcester.

* Stocks of Oakite Materials are carried in these cities.

OAKITE

TRADE MARK REG U.S. PAT. OFF.

Industrial Cleaning Materials and Methods



LOBDELL

CHILLED IRON ROLLS
AND
MACHINE CALENDER STACKS

Specified on your new machines or for the new rolls for your old stack insure rolls of maximum hardness and perfect finish.

Calender Stacks are equipped with Electric Motor, Hydraulic, or Ratchet Lift all operated from the floor.

Improved Oiling Systems can be furnished either completely circulating with oil filter and sight feed or closed end ring oiling boxes or a combination of both.

Ask for your copy of our treatise on the Care and Upkeep of Paper Mill Rolls.

LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE.

Superior in Name and Quality

CABBLE Superior Fourdrinier Wires have the reputation of over three-quarters of a century wire making behind them.

Their Superiority is the result of a thorough knowledge of the requirements of progressive paper makers gained in that long period.

That is the reason why paper mills from Coast to Coast from the Great Lakes to the Gulf are constant users of Cabble Superior Fourdrinier Wires.

Smooth, and of an even mesh, Superior Wires do not groove the suction boxes. Made of the best phosphor bronze or brass their toughness and strength enable them to withstand the hardest usage for the greatest length of time.

The same Superior quality can be had in phosphor bronze or brass wire cloth for paper and pulp mills.

OUR PLANT IN BROOKLYN, N. Y.

The Wm. Cabble

Excelsior Wire Mfg. Co.
80-88 Ainslie Street
Brooklyn, N. Y.

assets at $211,228, main items being notes and securities, $119,665, and accounts, $77,411.

A new national bank, to be known as the Seward National Bank of the City of New York, is being organized in New York, and on the organization committee are two men associated with and widely known in the paper industry—Howard E. Atterbury, president of Atterbury Bros., Inc., and Charles C. Davis, vice president of the Eaton, Crane & Pike Company, of New York. The new institution will start with a capital of $2,000,000 and a surplus of $1,000,000 paid in.

Joseph T. Lea, of the E. M. Sergeant Company, Inc., wood pulp importers of 501 Fifth avenue, New York, returned a few days ago from a short business trip to Europe where he visited the Scandinavian countries and other points.

Edward A. Stone has withdrawn from the Stone Bros. Company, of New York and Cleveland, and together with Herbert P. Brock, who was associated with the Stone Bros. Company for several years, has organized the E. A. Stone Company, Inc., which will deal in all kinds of papermaking rags, foreign and domestic, with offices at 67 West Forty-fourth street, New York.

The Bastrop Pulp and Paper Company, a Delaware corporation manufacturing wrapping paper with mills in Bastrop, La., and a subsidiary of the International Paper Company, has changed its name to the Southern International Paper Company, according to official notice filed.

The International Paper Company has declared a regular quarterly dividend of 1½ per cent on the six per cent preferred stock and a regular quarterly dividend of 1¾ per cent on the seven per cent preferred stock, payable January 15 to stock of record January 3.

The Tribune Paper Mill Supply Company, Inc., is the name of a new concern just organized and incorporated under New York State laws to handle all descriptions of papermakers' supplies, with a capital stock of $10,000. Offices have been established in the Tribune Building, 154 Nassau street, New York. The organizers of the firm are William J. Rooney, formerly with the S. Silberman Company, of Cleveland and New York, and also previously with the United Paperboard Company, Inc., and M. Lustberg, formerly with the S. Silberman Company.

The Schaffer Paper and Twine Company, Inc., of 328 West Forty-first street, New York, has filed notice of an increase in capital from $10,000 to $20,000.

H. M. Elish & Company, paper jobbers of 46 Great Jones street, New York, announce that on February 1, 1927, they will be located at 143-145 West Twentieth street, New York, where they will have three times the floor space they now occupy.

A new partnership under the name of Silverton & Brody has been formed by Alan A. Silverton and Harry A. Brody, both formerly with A. C. Loveland & Company, Inc., of Hartford, Conn., dealers in paper manufacturers' supplies. The new firm occupies the former New York office of the Loveland organization in the Fifth Avenue Building, 200 Fifth avenue, and will specialize in new rags for paper mills.

Everett Addoms

Everett Addoms, secretary and director of the Miller & Wright Paper Company, 65 Duane street, New York, died suddenly on a train as it was pulling into the Grand Central Station, New York, on Sunday, January 2. Mr. Addoms, who had been suffering from a weak heart for some time past, had been visiting a daughter in Syracuse and was reading a book on the train when he collapsed and was dead before passengers could look for a physician.

Mr. Addoms was born in San Francisco and had been taken East by his parents when a child. He was 54 years old at the

Rhoads Tannate Leather Belting

For Efficient Drives

THE above belt, the main drive on a Fourdrinier machine, is a 32-inch Watershed Tannate. It is one of several belts that are winning a worthwhile reputation in Minnesota paper mills for Rhoads Tannate Leather Belting.

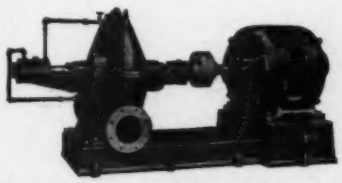
Its long life on hard drives, its unusual "Tannate grip" mean less trouble in upkeep, and very often an increase in output, which is an important factor in this day of severe competition.

Specify Tannate Belts even for your hardest drives—or Watershed Tannate if it runs in a damp or wet place. The Rhoads service guarantee assures you satisfaction.

J. E. RHOADS & SONS

PHILADELPHIA.....47 North Sixth Street
NEW YORK.....112 Beekman Street
CHICAGO.....334 West Randolph Street
ATLANTA.....80 South Forsyth Street
CLEVELAND.....1234 W. Ninth Street

Factory and Tannery: Wilmington, Del.



High Efficiency Centrifugal Pumps

We build the latest improved types for every pumping requirement in paper and pulp mills.

Write for Catalog

Lawrence Pump & Engine Co.

P. O. Box 70B LAWRENCE, MASS.

Appleton

Fourdrinier Wires

Cylinder Wires

Save-All Wires

Washer Wires

In Brass and Phosphor Bronze

"Appleton Wires Are Good Wires"

APPLETON WIRE WORKS, Inc.
Appleton, Wis., U. S. A.

time of his death and had been connected with the firm of Miller & Wright for upwards of thirty years. He is survived by two married daughters and a son who is an undergraduate in Harvard University.

NEW ENGLAND NEWS

Three Big Events

Three outstanding events took place in the month just closed. First and foremost was the sale of the American Writing Paper Company to its reorganization committee for the account of creditors and bondholders, which practically ends receivership; second, the adoption by New England paper merchants of the 1,000 count to supplant the ream of 500 sheets, which has many repercussions for the manufacturer, and third, a most enthusiastic and instructive safety meeting in Boston.

The American Writing Paper Cmpany becomes solvent once more, and in the opinion of many outsiders besides S. L. Willson, is in the soundest financial position since it was organized in the late '90s. On December 27 a sale was held at Windsor Locks, Conn., and the upset price bid in for the account of the reorganization committee was paid. This sale was to technically satisfy the claims of the creditors and was followed by a sale at Holyoke to cover the requirements of the trust indenture in the first mortgage bonds. The sales netted together $5,550,600. Both sales have been approved by the Federal courts in Boston, and the plans for reorganization will be pushed through without delay. These include sale of all outlying mill properties except the Platner & Porter division at Unionville, Conn., and the Windsor Locks division, also in Connecticut. All other manufacturing will be concentrated in Holyoke.

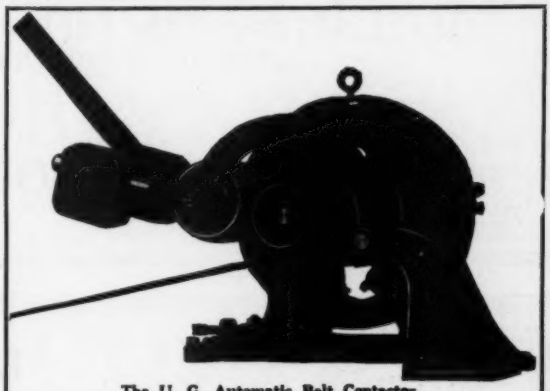
The personnel of the management will remain essentially as it has been of recent years, the reorganization committee having complete confidence in Mr. Willson and his choice of assistants, for it is only through the splendid record of the company during the past three years under Mr. Willson that the reorganization was made possible. It is understood in Holyoke that the company will actually show a profit for its current fiscal year.

There will be little difficulty in consummating the details towards placing the new American Writing Paper Company on a solvent basis, for all but $800,000 of the $12,000,000 of first mortgage bonds have been deposited, all but $4,000 of the $3,100,000 of creditors' claims, two-thirds of the preferred stock and much of the common. There may be a little trouble in realizing on the mills which are to be sold, but the committee intends to proceed in this disposal very deliberately. Offers for some of the Massachusettts properties have already been received.

The End of the Ream—With the encouragement of mill and printer to spur them on, the New England Paper Merchants' Association assembled at the Boston Chamber of Commerce and formally adopted the 1,000 count basis for the sale of paper on December 27, to go into effect on February 1. A committee was appointed to handle the arduous task of translating price lists into the new count, and the co-operation of mills is being sought to make their work easier. Some of the Holyoke mills have long since sold their paper without regard to the ream. A few recalcitrant merchants may be found who refuse to adopt the new standard, but these will quickly swing into line when mill pressure is brought to bear. The mills have made it plain in New England that unanimity is essential to secure their heartiest co-operation.

First New England Safety Conference Held—With water and slush ankle deep, in fact the worst night of the winter to date, some sixty New England safety men from paper and pulp mills sat down to dinner at the Hotel Westminster on December 27 and attended the first regional safety conference of the Pulp and Paper Section of the National Safety Council. N. F. Bartlett, safety director for Hollingsworth & Vose Company, managed the affair with great spirit. During the dinner brief ten-minute talks were given by B. D. Rogers, of Bird & Son, whose Phillipsdale, R. I., mill stood among the few New England plants to receive a certificate in the Paper Industry's last con-

Proved Results Instead of Experiment



The U. G. Automatic Belt Contactor

WOOD'S SHORT CENTER BELT DRIVE

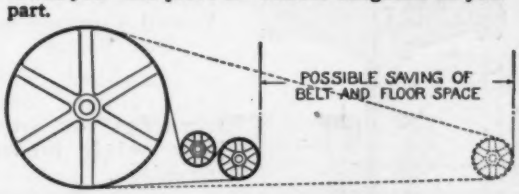
When you buy a Wood's Power Transmission Appliance you are not buying an experiment but a proved result of long lasting economy—a result that carries with it the experience of 70 years in solving power transmission problems.

For example, the Wood's Short Center Belt Contactor is a power transmission machine with distinct money saving, power saving, appeal. Saves belts, saves power, saves floor space. The increased arc of contact illustrated below shows how you get full power transmission with this Short Center Belt Drive—and that means big power and belt savings over the old method.

Wood's Short Center Belt Contactor is successfully and economically serving many and varied industrial plants throughout the United States. It will in your plant, too.

There's a Wood's Dealer near you who can quickly and efficiently supply your power transmission needs. Get acquainted with him. He's a worthwhile man in your community and he's reliable.

Just ask him how you can effect savings with this present day power transmission need. He'll be glad to tell you—and prove it—without obligation on your part.



T. B. Wood Sons Co.
Chambersburg, Pa.

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Cambridge, Mass.

SOUTHERN BRANCH
Greenville, S.C.

Makers of Power Transmission Machinery Since 1857

Shafting, Cast Iron Hangers, Pulleys, Flexible Couplings, Friction Clutches, Short Center Belt Drives, Hanger Boxes, Pillow Blocks, etc., equipped with or without Wood-Fafnir Ball Bearings.

RESILIENT RUBBER ROLLS

It is the "resilient cushion" and not the softness of the roll that takes the water out and gives maximum felt economy at the same time.

Made by

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The Rubber Roll Makers NEWTON UPPER FALLS, MASSACHUSETTS

THE WATERBURY FELT CO.

SKANEATELES FALLS

New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

SPECIFY

Powell Valves

For Long Uninterrupted Service

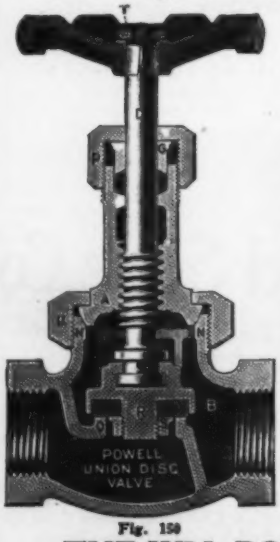

Fig. 150

Powell Composite Disc Valves

are furnished with bronze body and trimmings or iron body with bronze trimmings.

Bronze valves with union outlets are obtainable for both hot water and steam heating installations.

Discs are interchangeable with all standard vulcanized discs. However, we recommend Powell.

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Dependable Engineering Appliances

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INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL

A Type for Every Service

GOULDS PUMPS, Incorporated

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MAGIC BOILER PRESERVATIVE

"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

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MAGIC
ESTABLISHED 1904

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test. Mr. Rogers declared that his East Walpole mill aspired to similar honors this year and proposed a contest in accident ratios between the Walpole mills of Hollingsworth & Vose Company and Bird & Son. Adam Wilkinson, safety manager of the American Writing Paper Company, emphasized the lead of the West in matters of safety promotion. He cited the wonderful results which the expenditure of time, money and brains had achieved at the Kimberly-Clark mills and offered the hearty co-operation of his company with other New England mills in any program undertaken.

The same sentiments were uttered by W. H. Croft, of the Esleeck Manufacturing Company, of Turners Falls, Mass. Mr. Croft also outlined the conferences held regularly at his mill with foremen to seek ways and means of eliminating accident causes.

Mr. Bartlett made a few characteristically enthusiastic remarks, prodding New England mill men, and urged general participation in the Paper Industry's Safety Campaign. He believed the cup can be won by a New England mill.

Safety in International Paper Co.—The meeting then went across to the auditorium of the John Hancock Bldg., where the speech by John Lundrigan, safety director of the International Paper Company, was delivered. Mr. Lundrigan launched into a history of safety in I. P. Company mills, starting in 1917. In that year 1,399 lost time accidents occurred, losing for company and men 18,194 days of service. With the Safety Campaign in full swing, it was whittled down 40 per cent in the following year. In 1925, notwithstanding the tremendous growth in personnel, it had been reduced to 342 accidents with 5,429 days lost. Placing the responsibility for safety on the mill managers early in the campaign has proved to be a great aid. On them and their supervisors of safety falls the burden of showing why an accident happened and how it will be prevented in the future. Complete reports are required following accidents. Safety meetings are required at least monthly, and mill manager must attend and so must every member of the committee or a delegate a suitable substitute. Conditions in the mill resulting in accidents must be among the topics of discussion at these meetings and ways and means to remove the cause must be planned. The occasional visits of Mr. Lundrigan and his assistants to these gatherings are very stimulating. Usually he or his representative from headquarters can point out a condition that has been overlooked.

The International Paper Company believes thoroughly in healthy employees. The company has gone so far as to advance funds for treatment of curable ailments when an applicant for work is "broke." Work in the mills must be done the I. P. way. Mr. Lundrigan believes the "right way is the safe way," and his regulations on safety, which were originally drafted with the help of the mill managers, require every new employee to do his work in the right way. He signs an agreement to that effect. It was impressive testimony to hear that in eleven years this great corporation has had but one contested accident claim. Another tribute to its safety directors is the record of its twelve New York State mills, which since 1920 have shown a tremendous reduction in lost-time accidents during a period when industrial accidents for the Empire State as a whole have doubled.

Money must be spent, said Mr. Lundrigan, but he cited facts and figures to prove the financial value of the expenditure apart from a gain in efficiency and the obvious humanitarian motive. In this respect, however, he evidently agreed with Mr. Wilkinson, of the American Writing Paper Company, who held that the financial motive, unfortunately, must be appealed to most strongly in the case of employees and employers to get best results.

In closing he touched on the lack of company insurance in Massachusetts, owing to legal restrictions. In New York State a $50,000 bond covers the State's requirements in permitting company insurance. A proposed Massachusetts permissary law would compel a $200,000 bond. Mr. Lundrigan urged individual mills operating in small communities to combine for effective safety work with manufacturers in other lines, thereby securing advantages usually possible only to the large unit. It takes money, but it is worth every cent.

Parker-Young Company have added four new offices to their large suite in the Board of Trade Building, Boston. The same

Pioneers in Paper Making

BELIEVING it will interest our friends to know something of the pioneer paper makers of America, brief notes of the earliest paper mills in different parts of the country will be recorded below from month to month.

Maine's First Paper Mill

Paper making in Maine was first promoted by Samuel Waldo and Thomas Westbrook, who erected a mill about 1734, at Falmouth, which is now a part of the city of Portland.

The promoters did not take an active part in the business, but leased the mill to Richard Fry, a papermaker from England, at an annual rental of forty pounds.

Apparently the venture was not a success, for Fry, failing to pay the rent, only occupied the property until December, 1736. Suit was brought against him and as a result of the judgment obtained he was imprisoned for several years.

Established 1842

Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

SPRINGFIELD, MASSACHUSETTS

REED SPAFFORD

Pulp Screen

WHAT DOES YOUR **POWER** COST YOU

UNHEARD OF LOW **POWER** PER TON

HALF **POWER** SAVED

VERY LARGE CAPACITY

VERY LIMITED FLOOR SPACE

OFFERED ONLY AFTER MANY MONTHS OF CAREFUL DEVELOPMENT

Improved Paper Machinery Company

Nashua, N. H., U. S. A.

company announces that it broke all records for paper production at its Lincoln, N. H., mill when 2,418 tons were made during 26 operating days, a daily average of 93.02 tons per day.

Maine Mills Get Pulpwood Refund

By a decision of the Maine law court, twenty-eight Maine manufacturers, five or six of them only being outside the paper industry, benefited to a substantial degree through reparations with interest which the court orders the Maine Central Railroad to pay. It may be recalled that the Maine Central advanced freights on pulpwood in 1925. The issue was hotly contested by the New England Paper & Pulp Traffic Association and several mills outside this organization, including the Great Northern Paper Company, Hollingsworth & Whitney Company and the International Paper Company. The Public Utilities Commission upheld the manufacturers and ordered a reduction with reparations, which was refused. The courts then confirmed the decision, but still the reparations were not forthcoming. The S. D. Warren Company in particular brought suit to collect excess freights and a decision awarding the claims with interest affects not only the Cumberland mills producers but all parties to the original case.

Bird & Son, Inc., of East Walpole, Mass., distributed $175,000 in Christmas bonuses to their employees on December 24. It came as a complete surprise. The extra compensation was based on 5 per cent of a man's yearly wages, providing he had a record of more than 5 years with the company. Over half the entire force benefited.

Frank Emery, private secretary to Superintendent Nevins at the Millinocket mill of the Great Northern Paper Company, becomes foreman of the finishing department, succeeding J. C. Mooney.

There remains much to be said in the railroad case of Senator Guld, of Maine. The senator has exercised his certificate right, which expired December 31, to start work on a railroad across northern Maine linking up at both ends with the Canadian Pacific. It opens up vast pulpwood lands owned by the International Paper Company. The assistance of the International is desired in making the road a success. Options on pulpwood around $2 per cord stumpage have been asked so that wood can be shipped to New York mills. Most Maine mills object strongly. They know that Maine with proper fire protection is the best situated state in the Union insofar as pulpwood reserves are concerned. It has a self-perpetuating stand of spruce, fir and poplar. This removal of great reserves to New York will hurt the future of the industry in Maine, they feel. The Great Northern Paper Company and the Bangor & Aroostook R. R. are among powerful Maine corporations opposed to the road.

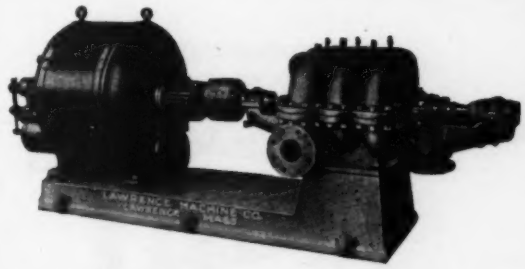
Pulverized Coal at American Writing Paper Co.

A new combustion engineering unit has been installed in the Station "A" plant of the American Writing Paper Company, at Holyoke, for the burning of powdered coal. It replaces underfeed stokers. The boilers, 400 h.p. horizontal water tube B. & W. make, were equipped with short flame, couch premixing type burners and motor-driven Raymond impact pulverizers. The setting heights of the boilers were increased. One great advantage of the new system is the use of high volatile gas coal, 13,200 b.t.u., a great saving in primary fuel expense. This fuel is being burned with an efficiency of about 80 per cent.

The coal as pulverized by the mill is of such fineness that it will pass through a 200-mesh screen. Considerable experimenting with coal was done at first, but the lower grades proved definitely satisfactory.

Due to the restricted height of the boiler, a flat air-cooled furnace bottom was used in the design. The rear front and side walls are of solid construction, and as the boilers are set in a battery it was deemed advisable to use air-cooled center wall.

About 85 per cent of the air used for combustion in the furnace is discharged from the auxiliary air fan into a main duct located below the floor line at the front of the boilers. Air is



LAWRENCE multi-stage high pressure pumps for boiler feed and water supply service, to meet all conditions where reliability and economical operation are an essential factor.

Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

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Office and Works, 361 Market St.
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Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

Expert Lubrication Service which costs you *nothing*

THE Tide Water Engineering Bureau is at your service in solving all lubrication problems. This expert service is entirely *without cost or obligation.* Send a card today and one of our Staff Engineers will be glad to call at your mill to make a lubrication survey under your direction.

The Tide Water Power Group
—for paper mill lubrication

TYCOL GEAR COMPOUND
A soft, semi-fibrous grease for enclosed gears under heavy pressure.

TYCOL MEDIUM YARN GREASE
For beater bearings where high temperatures, heavy pressures and water are present.

TYCOL YARN GREASE
For dryer and other bearings operating at high temperatures.

TYCOL LUBRICANT NO. 1
A medium hard grease for Jordans, grease lubricated calender rolls, and for general use.

TYCOL GREASE
A hard grease for replenishing Tycol Yarn Grease.

TYCOL GEAR COATING SOFT
A viscous lubricant especially recommended for use on slow-moving open gears.

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11 BROADWAY NEW YORK

WALL BOARD MILL MACHINERY
SLITTERS
SIZING MACHINES
PRINTING MACHINES

Slitters built with rolls entirely power driven—
in several sizes for any requirement

FARNHAM MFG. CO., BUFFALO, N.Y.

Technical Association Papers, Series VIII (1925)

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Chemistry in the Soda Pulp Process
Economy of Lime Reburning
Evaporator Test Code for Soda Mills
Preliminary Impregnation of Wood
Strength Test for Chemical Pulp
Sulphite Waste Liquor as Fuel
Use of Decayed Wood for Bleached Chemical Pulp

MECHANICAL OPERATION
Alexander Electric Paper Drier
Burning of Wood Refuse
Moisture Meter and Its Use in Water Removal
Ruths' Steam Accumulator
Steam Prime Movers for Paper Mills
Ventilation of Paper Machine Rooms

MECHANICAL PULP
Norton's Segmental Pulpstone
Refiners for Groundwood Tailings

PAPER TESTING
Bureau of Standards and the Weller Brittleness Test
Extractor and Cleaner for Carbon Paper
Pulp Weight Factors for Microscopical Analysis
Relation of Paper Furnish to Paper Tests
Stains for Microscopical Analysis
Study of the Mullen Tester
Test for the Liquid Permeability of Paper
Tests at Various Relative Humidities
Use of the Glarimeter for Paper Finish

WASTE
Burning of Wood Refuse
Economy of Lime Reburning
Uses of Carbon Recovered from Black Ash
White Water and Stream Pollution
White Water Utilization Code

MISCELLANEOUS
Barrta Paper
Bibliography of Paper Making for 1924
Effect of Acetic Acid on Animal Glue
Notes on China Clay
Reference Library
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Tendick's Rosin Size Color Test

Write to THE PAPER INDUSTRY, 356 Monadnock Bldg., Chicago, Ill.

"On the worst place you can find"—

Fig. 106
Screwed Jenkins Standard Bronze Globe Valve

The Jenkins Fair Offer says:—"If you will put a Jenkins Valve on the worst place you can find, where you cannot keep other valves tight, and if it is not perfectly tight, or does not hold steam, oils, acids, water or other fluids, longer than any other valve, you may return it and your money will be refunded." Jenkins service may be obtained only from Jenkins Valves—make sure of the genuine, marked with the Jenkins Diamond Mark.

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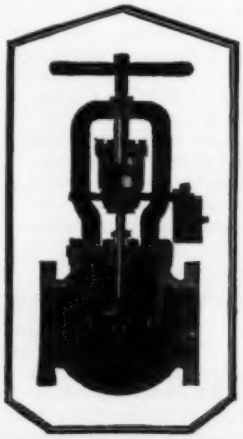
JENKINS BROS., Limited
Montreal, Canada London, England

Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

VALVE MAKERS FOR OVER FIFTY YEARS



The Davis Stop and Check Valve permits steam to flow from boiler to header, but closes automatically should the flow be reversed. Made in globe and angle patterns for pressures up to 350 lbs. and total temperatures to 800 degrees. Sizes 2 to 12 inches.

Chicago Power Show
Space 45

WHEN you wonder what would happen in your plant if one boiler let down while the rest were carrying a stiff load .... what do you do about it? The engineer who has Davis stop and check valves can *see* that they will work and he can test them by hand, easily and quickly.

Besides, he knows that scale cannot interfere with prompt action, nothing short of smashing the valve can make a Davis Stop and Check stick when it should close.

Davis security means peace of mind to the engineers and it also means greatest safety if anything happens. See for yourself. Send for the Davis catalogue.

DAVIS VALVE
STEAM SAVERS SINCE 1875
SPECIALTIES

G. M. DAVIS REGULATOR CO., 422 Milwaukee Avenue, Chicago, Ill.

discharged from this duct through the hollow tile furnace bottom to the rear of the boiler, where it enters the passageway and turns in its path to the center wall, through which it is carried, returning to the front of the boiler and discharging into a duct leading to the burner. Additional 15 per cent of air is drawn from the room and is used as a means of conveying the coal after being pulverized from the mill to the burner.

MICHIGAN NEWS

Consolidated May Distribute Melon

A 50 per cent stock dividend on the present capital of $7,500,000 will be recommended at the annual meeting January 18 of the stockholders in the Consolidated Paper Company, of Monroe.

The last year has been an excellent one, according to E. C. Rauch, president. The annual dividend of 7 per cent has been paid and, according to future outlook, can be continued on the proposed increase in capital. The bonus system is continued and payments for 1926 will amount to $62,498. About 1,500 employees participate in the annual distribution of life insurance, the total value of the policies issued for 1927 amounting to $1,685,750.

Emil Yahnke Resigns from Standard Paper Co.

E. F. Yahnke, for the last ten years general superintendent of the Standard Paper Company, has tendered his resignation. He plans to go south for a stay of two months before taking up other activities. No announcement of his future plans is made at this time. Mr. Yahnke started with the Standard Paper Company as back tender about 1906 and worked up through the ranks to his present position. He is well and favorably known in Kalamazoo and throughout the valley.

W. A. Crawford, well known among the papermakers of the Kalamazoo Valley district, has been appointed general superintendent to fill the vacancy.

A. B. Scheid, well-known Kalamozoo capitalist and treasurer of the Watervliet Paper Company, was recently operated on for appendicitis at New Borgess hospital.

The annual meeting of Kalamazoo Vegetable Parchment Company sales representatives was held for the three days beginning Tuesday, December 28. There was a series of meetings to consider sales plans for the company year and to review experiences of the last twelve months. The salesmen were the guests of the company, and in addition to the straight business a program of entertainment was given.

The Folding Paper Box Corporation, Kalamazoo capital $10,000, has filed articles of incorporation with the Secretary of State in Lansing. The concern is to manufacture and sell wooden and paper boxes. The original incorporators are John J. Vandeberg, John E. Burger and George J. Bachmeyer.

The annual meeting of the Standard Paper Company is called for 3 o'clock Monday afternoon, January 17, in the company's offices. Directors and officers will be elected for the ensuing year.

Kalamazoo Plants Hold Christmas Parties

The honor roll of Kalamazoo Vegetable Parchment Company's employees, those who have completed ten years of service with the concern, was increased by seven names Friday morning, December 24. This, the fifth of similar annual events, was one of the features of the Parchment employees' sixteenth annual Christmas assembly and tree.

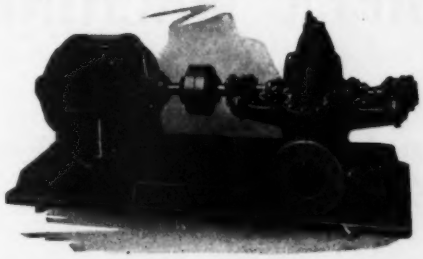
Those added to the list were Jacob Feldes, Merton Ward, Lester Smith, Henry Colvin, Charles Shaffer, Clarence Warren and Charles Kindleberger, Sr. Facing President Jacob Kindleberger and in the presence of a crowd that packed the Parchment community house to its capacity, they received their diplomas of merit and special Christmas offerings. Their excellent service was highly commended by their chief.

Hungerford Filters
for
Clear Water

Hungerford Softening Filters
for
Soft Water

Hungerford & Terry, Inc.
Clayton, N. J.

"Chicago" Pumps



Here is a "Chicago" single stage horizontal pump. It is known as Type "D." Used for House, Booster, Circulating and Fire Duties. Designed to handle any kind of liquid or semi-liquid. Sizes up to 6". Capacities up to 2000 G.P.M. Heads up to 215 pounds. Ask for Bulletin 101.

Multi-stage Pumps for large capacities and high-pressures can also be furnished. Ask for Bulletin 103.

Literature Gladly Furnished Upon Request

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SEWAGE-CONDENSATION-CIRCULATING
BILGE-FIRE-HOUSE-VACUUM
2318 WOLFRAM STREET CHICAGO, ILLINOIS

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Used Paper and Pulp Mill Machinery for the Mill

Paper Merchant, Jobber and Converter

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261 Broadway **New York City**
166 West Jackson St. **Chicago, Ill.**

Our Motto, "Service First"

Paper Mill Wire Cloth
Wisconsin Wire Works
APPLETON, WIS.

PAPER MACHINES FOR SALE

In good condition **Immediate Delivery**

One—2-cylinder machine. 2 presses; 10 dryers, 42"x84"; one calender; reel; single drum winder; marshall drive.

One Fourdrinier machine. Wire 96"x50'. 2 presses; 15 dryers, 48"x94"; one calender; reel; two drum winder; marshall drive.

By:
FRANK H. DAVIS COMPANY
175 Richdale Avenue, Cambridge, Mass.

FOR SALE

A manufacturer of paper mill machinery, whose plant is located in a live town of the Miami Valley, desires to retire from business, and is therefore offering to sell his entire holdings including machinery, equipment, stock and real estate. Business established in 1908 and a money maker. Located on the Big Four Railroad and Erie Canal. Several large paper mills in same town make labor easily obtained. Offered on basis of inventory and appraisal. Reasonable terms of payment can be arranged. A rare opportunity for some one familiar with this kind of business. Further particulars gladly furnished upon request.

Address Nein Brothers, First & Merchants National Bank Bldg., Middletown, Ohio.

WANTED:—Man to operate toilet paper rewinder, capable of taking full charge of machine and crew operating same. Very good opening for the right person. Unless experienced in the manufacture of toilet paper do not apply. Mill situated in the Province of Quebec. Apply Box 112, The Paper Industry.

WANTED—Boss machine tender in a mill in the middle west making Sulphites, Wrappings, Manilla, Bond and Book papers. Apply, stating age, weight, married or single, experience and references. Box 113, The Paper Industry.

Steel Plate Construction
Steel Storage Tanks, Blast Furnaces, Gas Holders
Steel River Barges and Plate Work of all Kinds
Steel Transmission Towers
RITER-CONLEY COMPANY
General Offices, Pittsburgh, Pa.

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is a most influential organ in the trade giving information appertaining to the Paper, Board and Pulp Industries in Germany, also dealing with trade patents. It is an official organ of the Cellulose, Paper Chemists and Engineers' Association. A special supplement is published each month entitled **Cellulosechemie,** which is of great scientific value. The price of both these publications is Six Marks, quarterly, postage extra.

Specimen copies can be obtained free of charge from:

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Want to Sell It?

—paper machine, boiler, digester, fourdrinier parts, mill equipment?
A small advertisement in the "Opportunity Section" of The Paper Industry will connect you with the proper buyers.

This brings the list of honor employees to 37 in all. In 1922 the initial event of this kind showed 11 eligible. There were 7 in 1923, 4 in 1924 and 8 in 1925.

That all employees might enjoy the exercises, the plant closed at 10:30 Friday morning and remained down until Monday morning, December 27, thus affording a sixty-hour rest period. The program was excellent throughout, the singing of the Christmas songs, under the direction of Don E. McDowell, being especially inspiring. Dr. Allan Hoben, president of Kalamazoo College, offered the address on "Your Better Self." The community house was beautifully decorated for the event, and between 750 and 800 workers took part in the festivities.

Crowds that taxed the capacity of the assembly hall in Bryant Paper Company's administration building gathered to enjoy the Christmas parties held on two successive evenings during Christmas week. Arrangements were made by the Human Relationship Association of the company, under the direction of Charles Robers, president of the association. There was a large Christmas tree, with candy, nuts and fruit for the children, and an entertainment containing several vaudeville acts. Dancing wound up the festivities.

The Kalamazoo Stationery Company ended work at 10:30 a. m., December 24, to permit the entire executive force and employees to participate in a Christmas party given by the company. One entire floor was cleared for the entertainment of more than six hundred employees. While each department had its own Santa Claus, there was one chief Saint Nicholas who rode into the assembly hall in his sleigh, drawn by a team of reindeer. There was a general distribution of presents and every employee received a gift. Dancing concluded the party.

The half a million dollar love piracy suit brought against Mrs. Florence Bardeen, of Otsego, the widow of the late George Edward Bardeen, paper magnate of Otsego, by Mrs. Gertrude Anderson, of Detroit, is to be discontinued. This became known when attorneys for Mrs. Anderson authorized withdrawal of the suit, which has been pending in Allegan county circuit court since last summer.

In keeping with their annual policy, the Western Board & Paper Company, Kalamazoo, has issued a call for $10,000 six per cent outstanding bonds. They are payable January 1 at the trust department of the First National Bank of Kalamazoo.

Paper Week in New York

Invitations have been issued for the fifteenth annual dinner of the American Paper and Pulp Association which is to be held on Thursday, February 24, at the Waldorf-Astoria Hotel, New York, as part of the Golden Jubilee Anniversary of the Association. General and special meetings of the parent association and the various affiliated organizations such as the Technical Association of the Pulp and Paper Industry, the Cost Association and the Salesmen's Association will take place during the entire week of February 21-25 and formal notices and programs will reach the members in a few days. Headquarters for all meetings will be established at the Waldorf-Astoria Hotel.

Winford Newman Caldwell

Winford Newman Caldwell, who served as president of the American Paper and Pulp Association in 1906-07, died at his home in Springfield, Mass., on Sunday, January 2. He was a native of Springfield where he was born on July 26, 1857. When sixteen years old he entered the service of the Springfield Institution for Savings where he remained some eight years, leaving in 1882 to become a bookkeeper for the Riverside Paper Company, Holyoke, of which company he became treasurer and director in 1891. He was a prime mover in the organization of the American Writing Paper Company in 1899, first serving as its general manager and then as president of the company from 1907 to 1914, when he resigned on account of ill health and became chairman of the board of directors. He thus rose from the position of a minor clerk in the Springfield Institution for Savings to the presidency of one of New England's great corporations, and was also honored by election to the presidency of the American Paper and Pulp Association.

Mr. Caldwell was prominent in the affairs of the community having served both as a member of the common council and as a delegate from the district to the Republican national convention. He is survived by his wife, Mrs. Fannie L. (Houston) Caldwell; one daughter, Mrs. Emmett H. Naylor, and one son, Charles M. Caldwell, of Boston.

Funeral services were conducted from the Caldwell home in Springfield on Tuesday, January 4.

The Ben Franklin Paper Co., Chicago, announces the appointment of Mr. Gustave Wuerst as Vice-President of that concern. Mr. Wuerst was formerly manager of the Cleveland branch of the Whitaker Paper Co., and has had over fifteen years of experience in the selling of high grade papers.

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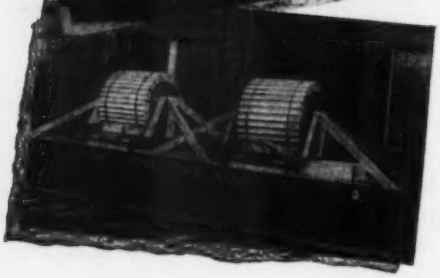

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Technical Developments in the Paper Industry

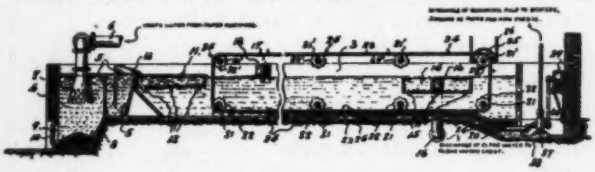
Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Paper Pulp Recovery Apparatus

THE illustration shows an apparatus which is used for the recovery of paper pulp and which is patented in United States Patent, No. 1,603,625.

The device consists of a tank which is provided with means for dividing one end so as to provide an intake chamber. This



intake chamber is connected in a suitable manner with an outside source of waste pulp liquor which is fed to this part of the apparatus. A catch basin is provided at the receiving end of the tank for receiving the pulp-bearing waste waters from the intake chamber, and these waters are allowed to overflow from this catch basin into the main portion of the tank. This operation is accomplished with the minimum of agitation. The tank is also provided with a suitable arrangement at the discharge end, and near this end there is also located a suitable pulp collecting sump. There is also an overflow basin for receiving the clear water from the upper water surface level of this tank. A clear water discharge conduit communicates with the overflow basin. A traveling conveyor is also provided for the purpose of moving the pulp which has settled out of the water and for depositing same in the pulp collecting sump.

Hydration of Pulp in Paper Making

PULP forms a chemical hydrate with water, and in the drying of the pulp under different conditions, the steam pressure is variable and the cellulose behaves in a manner similar to that of other elastic gels, as for example gelatine, from which it differs only in its organic structure. Cellulose hydrate may therefore be considered as an "elastic gel with organic structure."

The rapidity of the absorption of water in the case of these gels is dependant on various factors, and of these the most important is the specific surface area. The increase in the specific surface area of the cellulose fiber is governed by the manner in which the pulp is disintegrated during the beating process. In other words, both the length and the width of the fiber is affected and in this connection the former is of greater importance. The fine disintegration of the fiber results in its greater absorption of water, and the water that is taken up by the beaten fiber, in contradistinction to that absorbed by the unbeaten fiber, is termed water of hydration.

A method has been worked out for the determination of the water of hydration in the beaten fiber. This consists in taking five grams of the dry cellulose in the form of a paper sheet of 6.5 centimeters diameter pressed by means of a hydraulic press at constant temperature on a 40 mesh wire at a standard pressure of 25 pounds per square inch, and then determining the water that is held back during drying. The paper sheet must be of uniform thickness throughout. In order to avoid irregularities in its surface, the upper plate of the press is covered with a thin rubber coating. Very moist beaten pulp will absorb approximately one hundred per cent of water, which means that the quantity of water absorbed is equal to the weight of the dry pulp, while under normal beating conditions the absorption will be approximately between forty and fifty per cent of the dry pulp substance.

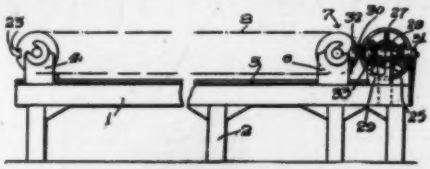
The progress of the beating, which is determined by taking half hour samples from the beater and testing them, is clearly indicated by the appearance of the paper sheet and its feel, and can also be defined in more definite and mathematical terms. Microscopic examination of the fiber shows no difference in regard to its refractometric index from unbeaten fiber. The increase in the transparency of the fiber is conditioned by the decrease in porosity due to the more compact felting together of the fine fibrillae.

The longitudinal section of the cellulose fiber appeared as a chain of cellulose molecules which are orientated according to two axes.

In practice, the unavoidable impurities which are found in the worked-up pulp, the structure of the pulp which varies in accordance with its origin, and the changes that take place in it during the preliminary treatment, all play an important role. An excess proportion of lignin substances, oxycellulose and strong bleaching of the fibers give rise to a marked tendency for the fiber to break in the transverse direction without there being any splitting in its length. Rapid cooked sulphite pulp and the like, which are overheated on heating, behave in a similar manner. Mitscherlich pulp is more resistant and yields fibrillae which are more split in the length. Pappers och Traevarutidskrift foer Finland 1926, number 16.

Fourdrinier Wire Stretcher

THE illustration shows a wire stretching machine, which is composed essentially of a pair of rollers, shown at either end of the machine and a suitable support for each roller, thus



(4) and (6). One of these supports can be slid along the machine and the other has a longitudinal groove in it and means for retaining the ends of the wire sheet in the groove. The wire itself is seen at (8) in the illustration. United States Patent, No. 1,608,191.

Reworking Old Newsprint

THE old paper which is to be reworked, is placed in a beater and beaten at a temperature of less than 45 degrees C and most advantageously at one of approximately 25 degrees C. The reagent used is a solution of sodium hydroxide. The consumption of sodium hydroxide amounts to approximately thirteen to thirty kilograms per ton of paper stock, being estimated on the average as approximately 2.5 per cent on the weight of the dry stock.

After the pigment matter has been sufficiently loosened up and dissolved out by this treatment, the paper stock is well washed with water. The next stage in the process then consists in treating the paper stock with a solution of sodium bisulphite. The quantity of bisulphite used for this purpose depends on the alkalinity of the stock, for it is understandable that more bisulphite must be added than is required for the neutralization of the sodium hydroxide which is still present in the stock. Hence the stock must react acid. The quantity of sulphite varied between none and twenty-two kilograms. The reagent is allowed to act on the stock until it is entirely consumed, that is until a neutral reaction is obtained.

The product is finally washed and the purified material is worked up in the usual manner. The reworked paper stock is

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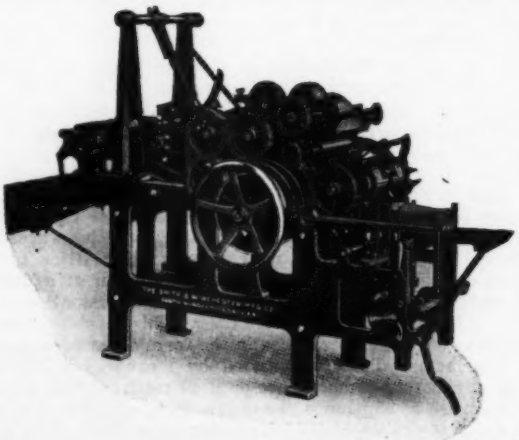
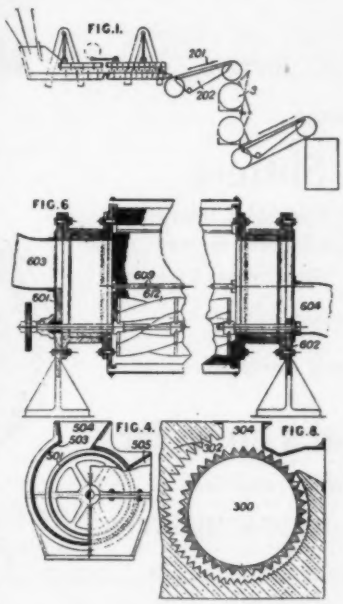


Paper Bag Making Machinery

not only the equal of new stock for the manufacture of newsprint, but is actually better than new stock from the standpoints of strength and purity. For further details, the reader is referred to the original patent, French Patent, No. 606,098.

Preparing Paper Pulp

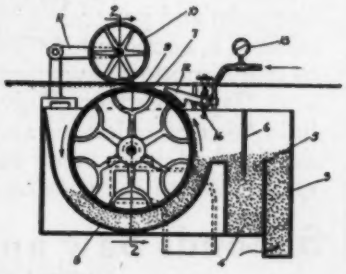
THE preparation of pulp from waste paper, rags and other fibrous material is effected by a continuous process, the material being mixed with water, torn or disintegrated, subjected to combined agitating and washing, pulped in a rotary grinder, and finally washed in a rotary washer. The tearing machine may be of a reciprocating type comprising a fixed spiked bottom board and a reciprocating upper spiked board, as is shown in Fig. 1. Then again the spikes may be mounted on a curved fixed member (503), Fig. 4, and the spiked moving member may be a cylinder or polygonal drum (501) mounted eccentrically, the space between the two members being greatest at the feed end (504) and least at the outlet (505). The agitating and washing apparatus may comprise a conveyor and water jets or nozzles (201), Fig. 1, which latter agitate the material on the conveyor and wash the dirt through it and into a trough (202). Another suitable agitating and washing apparatus comprises a rotary screen which is mounted on the bars (609), Fig. 6, and provided with an interior paddle agitator (612).



Water is supplied within the screen by a spray pipe which is not shown. The screen rotates in trunnions in fixed ends (601) and (602) having an inlet (603) and outlet (604) respectively. The grinders (3), Fig. 1, may be of iron, steel, bronze or granite, and the lava of Brohl or Andernach is stated also to be suitable. They comprise a cylinder (300), Fig. 8, having grooves with zigzag or like shaped edges, and a counterpart (302), the ribs of which at the inlet (304) are rough or coarse and are finer at the outlet, the cylinder being so mounted that the clearance between it and the counterpart diminishes towards the outlet. The apparatus may be duplicated and the successive disintegrations then become finer in character. Coloring or bleaching materials may be added at or between any of the stages and the wash water may be clarified and reused. British Patent, No. 258,630.

Attachment for Paper Making Machines

THE illustration shows an attachment for paper making machines which is patented in United States Patent, No. 1,608,698. This attachment consists of the combination of a trough which is adapted to contain a supply of the semi-liquid pulp. This trough is seen at (8). A drum (7) is mounted so that it revolves in the trough (8), and this drum is provided with a surface for gathering the pulp. The pulp can be seen adhering to the surface of the drum in the figure. The belt (9) runs above this drum and the thin sheet of pulp on the surface of the drum is transferred to this belt. A head (12) is mounted transversely to the drum (7) between the trough and the belt (9), and this head is provided with a series of nozzles through which fluid pressure is delivered upon the surface of the pulp. This has the effect of turning the fibers in the layer of pulp on the surface of the drum transversely or at an angle to the direction of the movement of the pulp.



Changes in Mechanical Properties of Paper Web

SAMPLES of the paper web were taken at intervals of five to ten minutes from various portions of the paper making machine, thus after the couch roll, the first press, the second press, the first and second groups of drying cylinders and the calenders. These samples were taken simultaneously. The samples were then allowed to dry in the air until their moisture content was from six to seven per cent and then they were examined. Papers of different thickness (200, 85 and 95 grams per square meter) and of the same composition (forty-five per cent of unbleached chemical pulp and fifty-five per cent of mechanical wood pulp) were examined.

The tearing strength of the paper increased regularly with the forward movement of the paper web in the paper making machine. The shaking of the wire and the pressing of the paper have the effect of enhancing the felting of the fibers. The increase in the strength of the paper after drying bears a very close relation to the sizing of the paper, all the more so, for the reason that the tearing strength of the paper web does not represent so much the strength of the fibers as of the entire felted mass. The calenders have the same kind of an effect as the presses.

It is probable that the cause of this phenomenon is to be found in the physico-chemical changes that the fiber undergo during the drying process. The percentage elongation increases after the couch roll and the presses, but it also decreases after drying. Hence, it must be held that important changes in the mechanical properties of the paper take place during its drying. Bumaschnaja Promischlennost, number 9, 1926.

Wet Press Improvement in Paper Making Machines

MOISTURE is removed from pulp, moist paper, paper, strawboard and the like in paper making machine during the manufacturing operation, by the use of superheated steam which is applied direct to the moving layer at any required angle. The superheated steam may be applied by adjustable perforated pipes. Hoods (c), shown in the accompanying illustration, collect abstracted moisture and condensed steam which is carried away by exhaust means. By this apparatus the drying cylinders and press rolls may be reduced in number or eliminated. British Patent, No. 257,449.

Aluminum Resinate in the Sizing of Paper

ALUMINUM resinate, freshly prepared and dried without heat, is completely soluble in ether, benzene, and carbon tetrachloride. It is insoluble in alcohol, which decomposes it, dissolving only a portion of free resin acid. It also undergoes decomposition on exposure to heat, after which ether selectively extracts a portion of free resin acid and the aluminum resinate becomes insoluble. Aluminum resinate is sensitive to acid conditions; a hydrogen ion concentration of pH 3.5 equivalent to the degree of acidity in the beater liberates a considerable proportion of the free resin acid.

Sulphite pulp also modifies the precipitated aluminum resinate so that it is no longer completely soluble in ether even when dried at the ordinary temperature, while the pulp after drying at a temperature of 115 degrees C only yields 40 to 55 per cent of its total resin on extraction with ether. Acidification is necessary for the quantitative extraction of total resin. An ethereal solution of aluminum resinate is capable of sizing paper; a suspension of precipitated neutral aluminum resinate also possesses sizing properties, but gives results which are inferior to those obtained when a certain amount of free resin is liberated by acidification either with alum or with sulphuric acid. A hydrogen ion concentration of pH 5.5 produced with

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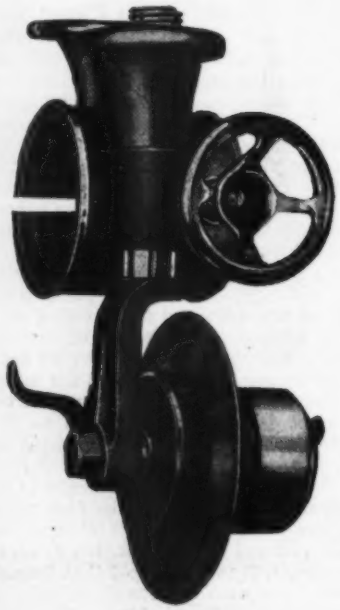

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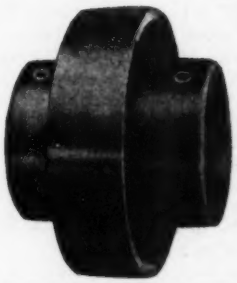

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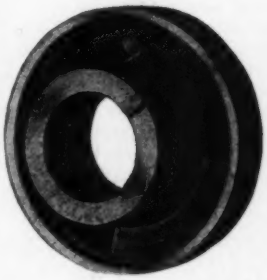

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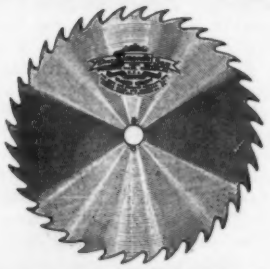

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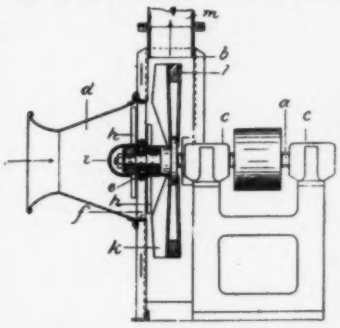
excess of alum gave a slightly better sizing than one of 3.5 produced with sulphuric acid.

The inferiority of the neutral resinate as a sizing material is ascribed partly to the coarser dimensions of its particles and partly to the absence of sintering on the drying cylinders. Under ordinary conditions of sizing with slight acidity, no important part can be ascribed to the precipitation of aluminum hydroxide in the fiber. If aluminum is fixed at all in acid conditions it is in exchange for calcium ions, and it may thus confer on the fiber a positive charge whereby the negatively charged particles of free rosin are attacked. Papier Fabrikant, 1926, volume 24, pages 410-13; 451-455.

Exhauster for Disintegrating Paper Stocks

THE new type of exhauster, which is shown in the illustration and which is patented in German Patent, No. 432,703, not only serves for comminuting paper stocks but at the same time it moves the comminuted particles along to the bins and machines in which they are further treated. This results in a considerable simplification of the operating process and in a considerable saving as well. These advantages are gained by combining a disintegrator and an exhauster in one and the same machine. Directly after the stocks are comminuted, they are removed and forwarded to the other machines in the installation.



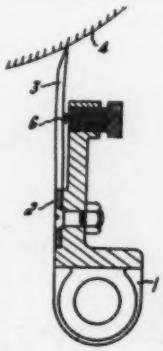
The machine itself consists of a housing (b), shown in the accompanying figure, through which a driving shaft (a), supported in bearings (c), is inserted. In addition there is another bearing (e) which is located in the stationary cutting ring (f) fastened to the housing. This cutting ring is provided with openings, over which the cutting knife (h), two of which are provided on both sides of the ring, rapidly glides.

The fan of the exhauster, which is shown at (k), serves not only to keep a current of air in motion, but also serves as a fly wheel and is thus provided with a heavy ring of metal shown at (l). The end of the shaft (d) which is located within the chamber is covered with a cap (i) so that no stock can penetrate into it.

The operation of this machine is as follows: The stock is admitted through the suction hood (d), and the suction of the fan draws this stock against the cutting ring (f) and the knives (h) and here it is disintegrated. The centrifugal action of the fan (k) serves to draw the disintegrated stock through the openings in the ring (f) and throw it upwards through the discharge outlet (m).

Paper Machine Doctor

IN THE known forms of doctors which are provided with a knife edge which moves in contact with the surface of the paper machine roll and which is fastened to the framework of the machine, these knives are fastened in a number of tongues which surround the circumference of the roller and are thus subject to the irregularities which exist in this surface. Doctors that are made in this manner possess the disadvantage that the pressure exerted against the surface of the roller changes in accordance with the give that exists in the knife holder without it being possible to regulate the pressure of each holder against the surface of the roll.



This disadvantage is overcome by the device which is shown in the accompanying illustration and which is patented in German Patent, No. 432,955. This device consists in the interposition of an intermediate member between the knife holder and the framework to which it is connected.

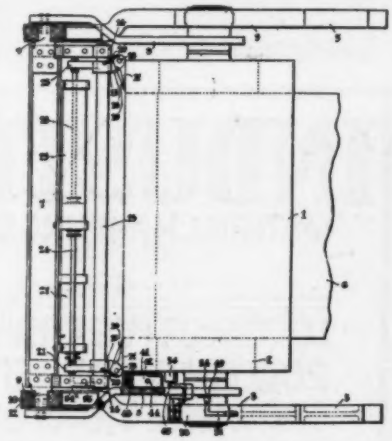
As may be seen from the figure, the doctor consists of a frame (1) to which a rail-shaped piece (2) is fastened. The working part of the doctor consists of a number of blades (3) which come into direct contact with the surface of the roll (4), and which are so arranged that the individual blades are adjustable automatically according to irregularities which occur in the surface of the roll.

Testing Strength of Paper Half Stuffs

THE testing of half stuffs is carried out by the preparation of sheets of paper under carefully standardized conditions. For routine tests in the pulp mill, the fiber may be conveniently prepared in the Lampen ball mill, but for the complete investigation of a new type of pulp the ball mill must be supplemented by heating tests in a properly designed beater which is capable of treating half stuff at the normal five per cent concentration. The beater tests must be controlled by determinations of the degree of beating by sedimentation of Schopper's apparatus. The formation of the sheets is the most difficult operation, and accurate conditions must be established. Sheets should be made so that they contain one hundred grams of substance per square meter. The pressure employed for pressing the pulp into the form of a compact sheet has a great deal of influencing in determining the strength of the paper. A press which is adjusted to a pressure of thirty-five kilograms per square centimeter is employed. Conditions of drying the sheets, preferably on a heated metal surface, must be standardized. Careful adjustment of atmospheric humidity is necessary when carrying out the tensile tests. Papier Fabrikant, volume 24, pages 465 to 468 and 481 to 483.

Removing Paper Laps or Webs

UNITED STATES Patent, No. 1,608,129 is concerned with an apparatus for removing paper webs, from the moving surface on which they are formed. This apparatus consists of two cutting devices which are arranged at either end of the moving surface in their normal position. Means are provided for moving these cutting devices towards each other in order to sever the pulp. Other means are influenced by the thickness of the pulp and are adapted to automatically cause the cutters to operate when a predetermined thickness of pulp has accumulated on the surface. The rate at which the cutting mechanism advances is the same as that of the surface from which the pulp is to be removed, so that during the cutting action there is substantially no relative movement between the surface and the cutting devices in the direction of movement of the surface.



Particle Size of Chemical Pulp

WHEN cellulose is carefully nitrated, then there is no reduction in the size of the particles, not even when the cellulose ester is dissolved in acetone. From this fact and with the aid of the diffusion method, invented by Herzog, it accordingly becomes possible to determine the size of the particles in the original chemical pulp. Hence, the following values have been found for the diameters of the nitrate particles made from the different starting materials.

German sulphate pulp.....2 s equals 140. 10-8 centimeters.
German sulphite pulp.....2 s equals 220. 10-8 centimeters.
Swedish sulphite pulp.....2 s equals 240. 10-8 centimeters.
Cotton .....2 s equals 340. 10-8 centimeters.

It is noteworthy that the greatest difference exists between cotton and chemical pulp. During the ripening of viscose the

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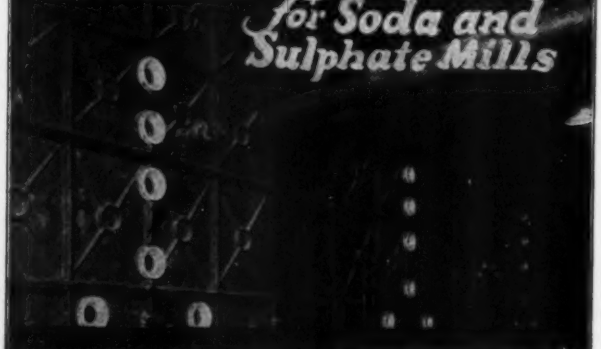

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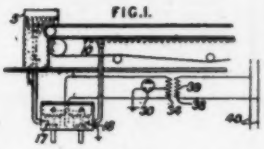
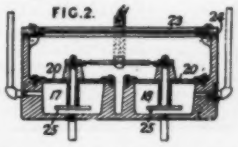
Pl 1—Gray

diameter of the pulp particles is reduced from 240 to 140. 10-8 centimeter. When beta and gamma cellulose are removed from mechanical wood pulp with the aid of strong sodium hydroxide solution, then the diameter of the remaining particles in the pulp amounts to 100.10-8 centimeter. In bleaching sulphite cellulose, the particle diameter is reduced to about one-third of its original size. A four hour beating of hemp cellulose results in a reduction of the size of the particles to one-half the original value. Papier Fabrikant, volume 23, pages 767 to 68.

Regulating Flow and Consistency of Pulp

IN A paper machine, the relation between the electrical resistance of paper stock and its consistency is used as an indicator in maintaining the production of paper of uniform weight, or in adjusting the consistency of the stock to the weight of paper it is desired to produce.





The electric circuit comprises two cups (17) and (18), supplied with stock from the flow box (5) and white water from beneath the tube rolls (10) respectively. In the sealing covers (20), are mounted electrodes (25) connected as shown to the opposite ends of a voltage source (34), a common grounded return being provided through an ammeter (30). The readings of the ammeter correspond with the consistency of the pulp stock. The voltage source (34) is the secondary of a transformer (38), the primary (39) of which is connected with alternate current mains (40). An inspection window (23) provided with a packing strip (24) seals the top of the casing. British Patent, No. 257,612.

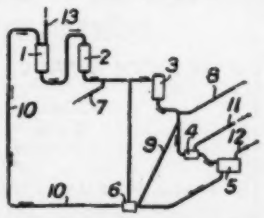
Chemically Resistant Felt

CHEMICALLY resistant felts are commonly manufactured from felted asbestos fibers and a chemically resistant binding agent. It has been found difficult to secure regular distribution of the chemical binding agent throughout the felted fibers so that not only a firmly constructed felt may be secured but also one that possesses the same permeability throughout its structure. This difficulty may be circumvented in the following manner:

The binding agent used is either soluble or can be melted and when used in this manner, complete penetration of the binding agent throughout the fibers may be prevented. Hence, the binding agent is used not in the liquid in dissolved form, but a certain proportion of the binding agent is suspended in the mixture of water and pulp which is then drawn through the felt and thus made to fill the pores of the fabric. British Patent, No. 431,306.

Treating Waste Liquors

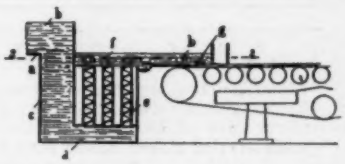
BLACK liquor from the soda pulp process is subjected to a combined heat and pressure treatment at a temperature of approximately 350 degrees C and about 150 to 200 atmospheres to precipitate the main portion of its organic content as carbonaceous matter, part of all of the separated liquor being additionally treated to recover a further portion of the organic substances and to recausticize the alkali that it contains. In a modification, the alkali is recausticized after the heat and pressure treatment and before further treatment.



In an example, the pulp and liquor from a digester (1), are separated in a diffusing apparatus (2), and the black liquor, mixed with caustic soda lye from a conduit (7) to increase its alkalinity is discharged to a high pressure container (3) where the heat and pressure treatment is effected. The carbonaceous and pitchy material is separated from the product through the conduit (8) and a portion of the liquor remaining is passed through conduit (9) to a tank (6) in which it is recausticized, and from which it is introduced, through conduit (10), into the digester (1) to decompose more wood. The remaining liquor is partially evaporated in the apparatus (4), methyl alcohol and other volatile constituents passing off through the conduit (11) and the thickened residue is distilled with superheated steam in the furnace (5), the volatile products, mainly acetone, being carried off through the conduit (12). The residue consists mainly of soda and is dissolved and recausticized with quicklime in a tank (6) and is used in the digester (1) and for increasing the alkalinity of the black liquor before treating it in the high pressure container (3). Further methyl alcohol is obtained at the vent pipe (13) of the digester (1). B. P., 258,035.

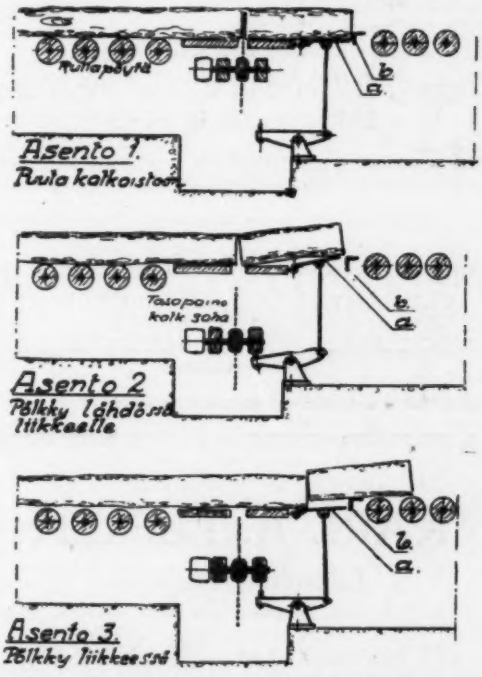
Manufacturing Paper

THE illustration shows a paper making machine which is used in carrying out the process described in United States Patent, No. 1,610,742. In this process, a flat stream of dilute pulp liquor is allowed to flow in a longitudinal direction, producing an eddying, whirling movement within the stream itself at the right angles to the direction of its flow. This is accomplished by admitting the pulp liquor from below, at (d), in the shape of a number of small eddies with vertical axes and then submitting the stream to straining while such movement continues.



Arrangement of Circular Saws

THE illustration shows an arrangement of circular saws at various points in the operation. This arrangement consists of an iron plate (a), which is approximately six millimeters in thickness, a lever system and an angle iron (b) which forms the edge against which the log rests. When the circular saw device is let down, the piece of wood that has been cut off the log is lifted by the iron plate (a) and then the rest of the log pushes this cut off part over the angle iron (b) and on to the carrying roller at the left of the illustration.



This device makes it possible to obtain sections of the log always cut off in the same lengths. The mechanical operation of this device results in a considerable reduction in labor in this operation. Pappers och Traevarutidskrift, foer Finland, 1926, number 3.

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New York, January 2, 1927.

THERE has been, of course some slowing down of demand for paper of most kinds during the holiday season. This is the period of the year when consumers and jobbers endeavor to keep stocks as low as advisable so as to make a good inventory showing, and buying consequently has been confined closer to actual and immediate requirements than was the case previously. At the same time, the market has continued comparatively active—everything considered; in fact, it is likely business for paper has developed in better volume than ordinarily is the case during the final weeks of the year. Moreover, the outlook for continued good demand—with some expansion—is bright.

The new year opens with the statistical position of the paper market quite firm. From all indications there is little accumulation of stock in any consuming quarter other than held against known needs, and it is stated on high authority that jobbers all over the country are carrying much less paper in stock than they were accustomed to a few years back. Latest available figures show that mills have fair-sized stocks but their holdings are nothing abnormal although they probably are a little larger than carried formerly, the reason for this being—in a great many instances—that manufacturers are more or less obliged to carry rather large stocks because their customers refuse to do so with the result the mill has to "hold the bag," as the saying is.

The prospect for business activity in various lines is favorable. There have been some predictions of a rather pessimistic nature by bankers, economists and others but it is believed these have been made as a sort of propaganda with the idea in mind of instilling a degree of cautiousness and conservatism in manufacturers and business men. Generally, the opinion expressed is that demand for practically all commodities will keep up in excellent volume, that there is going on a gradual readjustment of labor and manufacturing costs, as well as distribution costs, and that as prices become more stabilized and on at least a little lower level, demand will be stimulated and business will record an increase in volume.

Insofar as the paper industry specifically is concerned, the outlook is most encouraging. There has been a marked growth in consumption of paper and board during 1926. Available statistics prove this very conclusively—there has been a comparatively big gain in the production of newsprint, wrapping and other classes of paper and of board and this increase has been caused solely by a larger use of the commodity. Advertising in the daily press and in periodicals has expanded appreciably; retail trade has increased; there has been a large gain in the use of paper containers and boxes for numerous purposes; more and more paper napkins, towels and similar articles are being consumed—all of which are factors resulting in a greater consumption of paper. At the moment there seems no reason whatever to believe this gradual increase in consumption and production will not keep up through the new year.

Production of paper in the United States in October showed an increase as compared with the preceding month, although the gain was slight, amounting to 0.4 per cent. Mills of the country manufactured a total of 566,569 tons of paper of all classes in October, contrasted with 571,988 tons in September, the reason the total figures are less in the former month being that several mills' reports are not included in the October statistics. October production also campares with 569,577 tons in August, 540,660 tons in July, 572,968 tons in June, 555,696 tons in May, 573,528 tons in April, 599,719 tons in March, 523,657 tons in February, and 548,820 tons in January.

The output of paper in October was substantially less than mills shipped out in that month, shipments aggregating 582,841 tons, thus reducing mill stocks from a total of 249,167 tons at the end of September to 224,777 tons at the end of October.

Production of newsprint in the United States and Canada showed a little decline in November as compared with the preceding month, according to the report of the News Print Service Bureau. During November mills of the U. S. manufactured 140,427 tons of newsprint and shipped out 141,042 tons, while Canadian mills made 164,798 tons and shipped 167,135 tons, making a total production for the two countries of 305,225 tons and shipments of 308,177 tons, as contrasted with 312,008 tons made and 315,232 tons shipped in October. The newsprint mills also made 1,714 tons of hanging paper in November, 448 tons of which were made in Canada. During November 18,154 tons of newsprint were produced in Newfoundland and 1,286 tons in Mexico so that the total North American output for the month amounted to 324,665 tons. For the first eleven months of 1926 the Newfoundland output totaled 169,256 tons, an increase of 130 per cent over 1925, and the Mexican production was 11,898 tons, a gain of 2 per cent over the same period in the preceding year.

During the first eleven months of 1926, production of newsprint by United States and Canadian mills totaled 3,257,620 tons, showing a big increase over the 2,778,871 tons produced in the same time of 1925, and also a larger gain over the 2,600,172 tons produced in the corresponding time of 1924. During November, the U. S. newsprint mills operated at 95 per cent of rated capacity and the Canadian mills at 93 per cent. The U. S. mills made 11 per cent more paper in the first eleven months of 1926 than in the same period of 1925, and the Canadian mills made 24 per cent more. The combined production of the U. S. and Canadian mills in the first eleven months of 1926 was 17 per cent greater than in the similar time of 1925. Stocks of newsprint at U. S. mills totaled 13,592 tons at the end of November and 12,571 tons at Canadian mills, making a combined total of 26,163 tons which was equivalent to 2.1 days' average production.

Production of paper board in the United States in October was slightly less than in September, amounting to 222,286 net tons, against 225,103 tons in September, according to the monthly report of the U. S. Department of Commerce. Board mills operated at 95.6 per cent of their rated capacity in October, compared with 95.8 per cent in the preceding month. The total output of board in the first ten months of 1926 amounted to 2,109,336 tons, contrasted with 1,892,414 tons in the similar period of 1925, thus recording a notable gain. Orders received by mills in October called for 220,817 tons of board, against 215,102 tons in September, while unfilled orders held by manufacturers at the end of October aggregated 91,912 tons, compared with 100,765 tons a month previous. Shipments of board from mills during October aggregated 229,671 tons, contrasted with 223,581 tons in September, and stocks of board at mills at the close of October totaled 52,940 tons, against 59,915 tons at the end of September.

The market for newsprint exhibits a very firm undertone. Contracting during recent weeks for 1927 supplies has been going on at a lively clip, and it is reported most publishers have increased their commitments appreciably. A development of interest is the announcement by *The New York World* of the price of its week-day morning issue from 3 to 2 cents per copy. This is the first newspaper to reduce its price in some while.

Book paper is moving in a steady manner and in good tonnage. However, some mills are seeking additional orders and the competition for business makes for somewhat of a soft undertone in prices although there has been no actual down trend in quotations. Wrapping paper is steady in price and is in good demand. Most kraft paper manufacturers have enjoyed a period of excellent business in the last couple of months and many of them are said to be well sold ahead.

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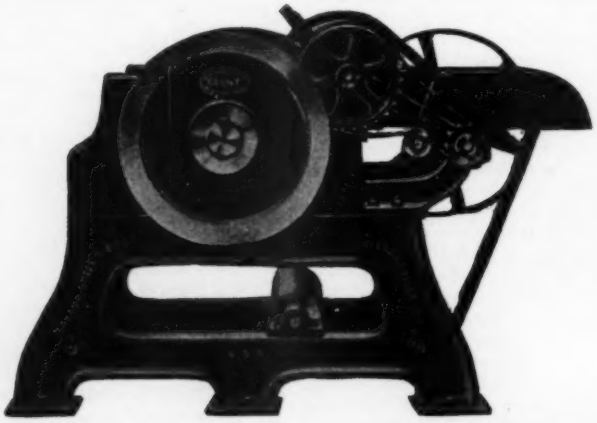

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Papermaking Rags

As is customary during the holiday and inventory season, demand for papermaking rags is of very narrow dimensions and of little or no consequence. Paper manufacturers with few exceptions have engaged in no buying of note during the last several weeks, having been more intent on keeping stocks down for inventory than in augmenting their holdings, and the market has gone from quietness to dullness; in fact, there has been practically no activity at all of importance. The price trend has been downward and such changes as have occurred have, in a great majority of cases, been in a declining direction. The situation, as a matter of fact, has been altogether in favor of buyers but with buyers manifesting virtually no desire to operate excepting on a very small scale against actual and immediate requirements.

Despite the inactive situation existing, probably temporary and due in large measure to the time of the year, there are signs of strength in the market under the surface. This appears caused not by factors at the consuming end but by circumstances surrounding the supply of rags, and it seems proper that a note of warning should be sounded to paper manufacturers as regards the future position of the market. For some months past, prices of papermaking rags have been in an unfavorable position—from the point of view of the seller of rags. The low grades or roofing stock have moved fairly freely until recently, but now this class of rags is in very limited demand and prices have declined. The better grades of old cottons have been extremely difficult to sell to paper mills and the prices prevailing have represented a loss to dealers collecting, sorting and packing such material for mill consumption. Prices of new cuttings also have ruled on levels affording practically no profit to dealers handling these rags.

The condition has reached a point gradually where collections of rags all over the United States has diminished appreciably. Collectors simply will not go out and gather stock because they have found through experience they cannot eke out a living by doing so, and many have deserted the rag industry for other forms of employment. Large rag concerns in various parts of the country have discontinued sorting mixed rags, and the supply of graded material has decreased proportionately. More and more the paper mills of the U. S. are becoming dependent on foreign supplies of rags, and as matters are, paper mills in Europe are becoming busier as their markets become better stabilized, and consequently there are fewer rags available in the various European countries for export to America. Moreover, prices abroad are advancing, and in some cases—in Germany at the moment, for instance—are well above a parity with market levels obtaining here, so that there is no inducement for dealers to export their rags.

This situation is particularly applicable to roofing rags. Prices abroad on such grades are firmer than they were a month ago, and importers assert it is really a difficult matter to buy at the prices American paper mills care to grant. Prices of foreign roofing stock, in fact, have risen slightly and yet shippers in Europe will not sell, except in occasional cases. This indicates that if such circumstances prevail when demand from paper manufacturers in the U. S. is at best quiet, there is no saying what may happen to prices when consumers here are more in need of supplies and are seeking to buy in more normal volume.

Prices of imported roofing have stiffened to where at least 1.80 cents a pound ex-dock New York is demanded for foreign linsey garments and 1.65 cents for dark colored cottons. Domestic roofing is steady in price also, and is quoted at 1.70 cents for No. 1 packing and 1.40 cents for No. 2 quality f.o.b. dealers' shipping points. Old whites and thirds and blues are in slack call and prices remain strictly nominal. No. 1 repacked whites can be bought, however, at 6.25 cents at shipping points without difficulty, and repacked thirds and blues are offered fairly freely by dealers at 2.50 cents per pound.

New cuttings have moved off further in price, and so little business is transpiring in some grades that prices are altogether nominal. Dealers ask around 11.75 cents a pound at points of shipment for No. 1 white shirt cuttings, 5.50 cents for fancy shirt cuttings, 7.25 cents for light silesias, 4.50 cents for washables, 9.50 cents for white lawns, and 7.25 cents for blue overall cuttings, but the probabilities are purchases can be made at slightly below these figures.

Little demand exists for foreign rags other than the roofing mill grades, and quotations are on the downtrend.

Average quotations f. o. b. shipping points and ex-dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	11.50-12.00
White shirt cuttings, No. 2	8.00- 8.50
Fancy shirt cuttings	5.25- 5.50
Washables, No. 1	4.25- 4.50
Unbleached muslins	10.75-11.00
White lawns	9.25- 9.50
Overall cuttings, blue	7.00- 7.25
Black silesias	5.25- 5.50
Light flannelettes	8.00- 8.25
Canton flannels, bleached	9.25- 9.50
Canton flannels, unbleached	8.25- 8.50
Shoe cuttings, bleached	8.75- 9.00
Shoe cuttings, unbleached	7.75- 8.00
Light silesias	7.00- 7.25
O. D. khaki cuttings	5.25- 5.50
Mixed khaki cuttings	4.75- 5.00
Corduroy cuttings	3.75- 4.00
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.00-13.50
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.00- 6.50
Whites, No. 2 repacked	3.00- 3.25
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	6.00- 6.25
Thirds and blues, rough	1.60- 1.75
Thirds and blues, repacked	2.40- 2.60
Black stockings	3.75- 4.00
Cotton canvas, No. 1	5.00- 5.25
White cotton batting	3.00- 3.25
Roofing, No. 1	1.65- 1.75
Roofing, No. 2	1.35- 1.45
Linsey, garments, foreign	1.80- 1.85
Dark colored cottons, foreign	1.65- 1.70
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

Rather severe declines have been recorded in prices of both old rope and bagging. Demand for these materials from paper mills during the last few weeks has been next to negligible, and the scattered sales made have scarcely served to constitute a market. There are one or two descriptions which, because of a shortage or owing to some other factor, hold relatively steady in price, but generally the trend in values is sharply downward.

Prices of gunny bagging have shot down at a rapid pace. Buyers seem to have entirely disappeared, and sellers, in their anxiety to move accumulations, have slashed prices with

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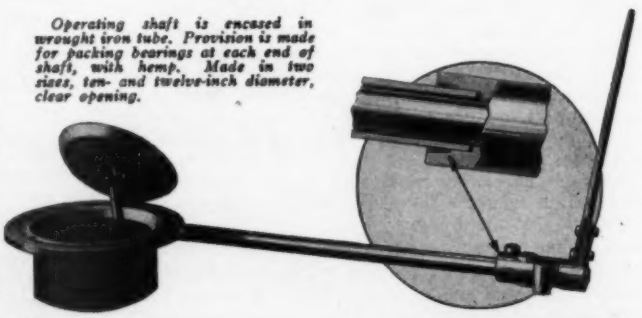

DAYTON GLOBE IRON WORKS, Dayton, Ohio

a vengeance. It is reported No. 1 domestic gunny can be secured now at 2 cents a pound at shipping points, and probably at less, while foreign gunny is quoted at 1.75 to 2 cents per pound ex-dock New York. No. 1 scrap bagging is offered around 1.65 cents at dealers' shipping points and is finding very few buyers among paper manufacturers at this price level. Roofing bagging is in fair call and continues to bring 1.25 cents or thereabouts a pound at shipping points.

Old manila rope of No. 1 domestic quality is quoted to paper mills at 4.50 cents a pound at dealers' points, and No. 1 foreign rope is reported available at 3.50 cents ex-dock New York. Strings are in slight demand and tending lower in price.

F.o.b. shipping point and ex-dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	2.00-2.25
Gunny, No. 1 foreign	1.75-2.00
Scrap bagging, No. 1	1.60-1.75
Roofing bagging	1.25-1.35
Wool tares, heavy	2.00-2.25
Wool tares, light	1.75-2.00
Manila rope, No. 1 foreign	3.50-3.75
Manila rope, No. 1 domestic	4.50-4.75
Sisal strings	1.75-2.00
Mixed strings	1.15-1.30

Old Paper

The market for old paper is at best quiet. Owing to the holiday and inventory period consumers are showing little desire to buy, and a factor which has contributed largely to the dullness was the closing down of board mills during the interval between Christmas and New Year's, which eliminated considerable consumption of paper stock and thus enabled this important class of buyers to refrain from purchasing. Prices have continued to ease and now are on lower levels than have been witnessed in some months. The fact that dealers have substantially reduced collections of nearly all grades, owing to the low values and the narrow mill outlet obtaining, appears to have had no sustaining influence whatever on market levels; on the other hand, it is emphasized by dealers that their collection machinery is badly disrupted and that when paper and board mills are in more need of old paper the probabilities are they will encounter some difficulty getting the supplies desired and that a sharp rise in market prices may ensue.

Mixed paper of No. 1 quality has been sold in the East at as low as 42½ cents a hundred pounds f. o. b. New York, and folded news down to 52½ cents New York. In the West, however, higher prices—some $2 to $3 a ton above these levels—prevail. Shavings are quoted at around 3.60 cents per pound at shipping points for No. 1 hard white and 3 cents for No. 1 soft white shavings. Old kraft has declined to a price basis of about 1.75 cents a pound f. o. b. shipping points for No. 1 packing. Heavy books are steady at 1.05 to 1.15c a pound.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.50-3.75
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.85-3.10
Colored shavings	.90-1.00
Heavy book, No. 1	1.05-1.15
Crumpled book, No. 1	.85- .95
Ledger stock	1.35-1.65
Kraft, No. 1	1.70-1.90
Manilas, No. 1	.75- .85
White blank news	1.50-1.60
Overissue news, No. 1	.60- .75
Folded news	.52½- .65
Sulphite mill wrappings	.70- .80
Mixed paper, No. 1	.42½- .55
Common paper	.30- .40

Pulp Wood

The demand for pulp wood continues fairly active, and reports tell of a consistently good business transpiring. Grinders are absorbing supplies freely both against contracts and tran-

GDC

IF YOU are confronted with special color problems such as fastness to light, fastness to alkali or soap; or if you have two-sidedness troubles of delicate shades, let our newly equipped laboratories assist you.

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JOSEPH GATTI President and Treasurer

GATTI Paper Stock Corporation
Formerly with the Gatti-McQuade Co.

Paper Manufacturers' Supplies

COTTON AND WOOLEN WASTE

All Grades of Rags and Paper Stock, New Wrapping Paper, Box Board and Cordage

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Western Paper Makers Chemical Company
Paper Makers Chemical Company

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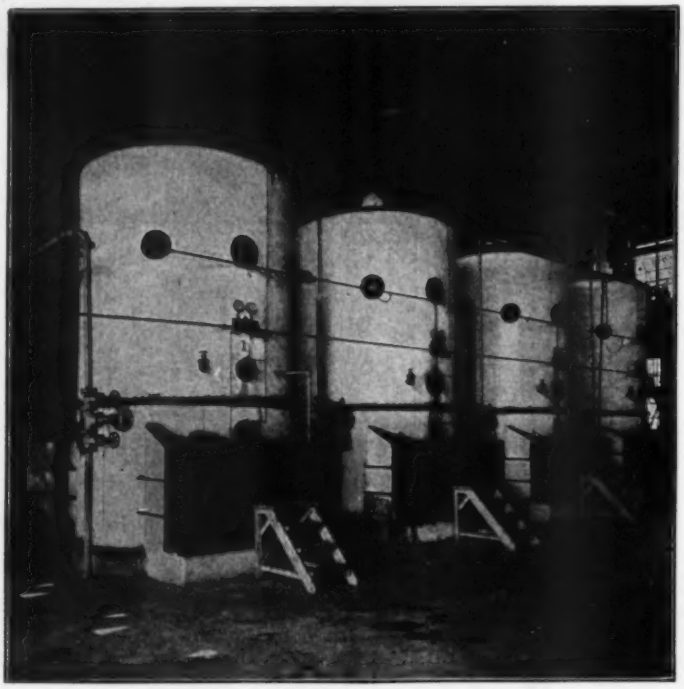
Rosin Size, Satin White, Clays, Fillers
Foam Killer, Felt Soap and Other Specialties



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EVAPORATOR

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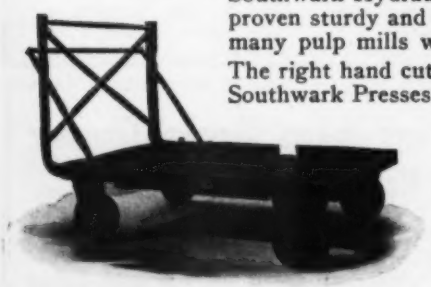
HYDRAULIC PRESSES
for Pulp, Sulphite, Baling, Etc.
HYDRAULIC PUMPS, VALVES, FITTINGS, SHOCK ABSORBERS, PULP TRUCKS, ETC.



Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.

Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

SOUTHWARK FOUNDRY AND MACHINE CO.

AKRON, O.
100 E. South St.

400 Washington Ave.
PHILADELPHIA, PA.

CHICAGO
343 S. Dearborn St.

sient orders, and prices display considerable firmness. Available stocks are said to be low, which is a factor helping to make for a firm market tone.

Exports of pulp wood from Canada, virtually all of which came to the United States, in the first eleven months of 1926 totaled 1,316,189 cords, valued at $13,287,074, showing a decline from the 1,351,728 cords of a value of $13,469,975 exported in the corresponding time of 1925.

Pulp wood enjoys a strong demand and promises well for the coming season, according to a report from American Consul W. Perry George, at Riviere du Loup, Quebec. Stocks available for shipment at this time are low and no important quantities, apart from water shipment of rough wood, will be moved until the heavy snows later in the winter. Prices f. o. b. cars are $10 per cord for peeled and $12 for rossed pulp wood. These prices are approximately $1 per cord higher than those obtained a year ago.

Mechanical Pulp

The tone of the market for mechanical pulp is firm, demand keeps up in good volume, and the limited supply available in the open market is a factor adding to the prevailing strength in prices. Consumers candidly admit, it is stated, they are experiencing trouble locating sizable amounts of ground wood. In domestic producing quarters there is practically no supply for sale; most grinders in the United States have need for about all the pulp they are producing or else are conserving their output, and therefore direct very little tonnage to the outside market. Similarly, manufacturers in Canada seem to be keeping regular customers only supplied, and have very little of their product to dispose of in the open market.

Quotations are well maintained at around $30 per ton f. o. b. grinding mills in Canada, and some sales have been recorded at a little in excess of this price. Prices of domestic ground wood are mainly nominal at about $32 a ton f. o. b. shipping points, quotations of course depending on the air dry test and the freight to consuming centers. Foreign ground wood is firm in price and is relatively high when compared with market levels here, dry of Scandinavian origin being quoted at about $38 a ton and wet at $36 ex dock New York or other American Atlantic ports.

Production of ground wood in the United States in October amounted to 104,062 tons, compared with 86,231 tons for identical mills in the preceding month. Despite this big gain in output, mill stocks increased but slightly from 120,936 tons at the end of September to 123,620 tons at the end of October. Producing mills used 94,422 tons and shipped out 6,931 tons in October.

Chemical Pulp

Demand for chemical wood pulp of domestic manufacture is fairly active, according to reports, though there has been some quieting of the market in recent weeks. This subsiding of demand has been seasonal, however, and has had little or no effect on ruling prices, particularly since most producers are well engaged making and shipping pulp against contracts and having their output sold ahead for a time. No changes of consequence have been recorded in quotations, and it is the contention of manufacturers and dealers that the market is so well stabilized and the prospects so promising, little revision in price levels is likely over the winter.

Bleached sulphite is quoted at 4 to 4.25 cents per pound f. o. b. pulp mills for the most popular prime brands though quotations range up to 4.50 and 4.75 cents for special grades. Strong unbleached of No. 1 quality is selling at 2.90 to 3 cents at producing points, and book grade sulphite at 3.25 cents and higher. Bleached soda is quoted at 3.75 to 4 cents per pound, and No. 1 kraft pulp at around 3 cents.

United States mills produced a total of 111,005 net tons of chemical pulp during October, contrasted with 104,588 tons in September, and 102,461 tons in August. Mill stocks at the end of October aggregated 19,457 tons, against 21,075 tons a month previous.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40
Unbleached sulphite, No. 1 strong (news grade)	2.85-3.10

"Distinguished for its high test and uniform quality."

Soda Ash

Caustic Soda

Bicarbonate of Soda

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SALT CRYSTALS

Salt in water softeners

PLAYS a vital part in determining the efficiency of the equipment. "International" recognizes the importance of this product in industrial production, and offers the services of its organization to assist in determining the best grade to meet specific conditions.

The resources of International Salt Company are located at strategic points, which makes for prompt deliveries and economy.

Specify International for Purity, Prompt Delivery and Service

INTERNATIONAL SALT COMPANY, Inc.
475 Fifth Avenue, New York

Uncle Jake says—

"The man who doesn't count his chickens before they are hatched, never sets the hen."

You will agree with us that he is right about it and you will also agree with us when we say that every business man should carefully select the tools of his craft to the end that he may slice off more and better business for himself this year than last year.

KVP BOND MADE IN U.S.A. will enable you to do this. How do we know it? Because thousands have proved it to their satisfaction.

KALAMAZOO VEGETABLE PARCHMENT CO. KALAMAZOO, MICH.

New Papers

Writing—	
White rag	15-40
White sulphite	10-30
Colored rag	15-40
Colored sulphite	9-30
Ledger—	
White rag	16-40
White sulphite	11-30
Colored sulphite	10-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	8-30
Colored sulphite	8-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	6.00- 6.50
No. 2 Kraft	5.25- 5.50
Southern Kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	45.00-50.00
Straw	52.50-57.50
Plain chip	40.00-45.00
White coated chip	55.00-60.00
Manila coated chip	50.00-55.00
Binder's board	70.00-75.00

Chemical Pulp

(Continued from page 1805)

Unbleached sulphite, No. 1 book	3.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	2.90-3.10
Screenings, refined	1.40-1.60

Chemicals

Demand for papermaking chemicals at the moment is rather slow but the market exhibits much firmnes of tone, and no drastic changes were recorded in prices at the turn of the year. Casein is quoted at around 15 cents a pound, duty paid, for the foreign product, and slightly less or about a half cent per pound for domestic casein. Bleaching powder continues to range from 2 to 2.40 cents a pound in large drums at works. Caustic soda is quoted at 3 to 3.10 cents per pound for the 76 per cent solid for spot shipment, while soda ash is a trifle lower at 1.32½ cents a pound f. o. b. works for contract commitments.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	14.50-16.00
Caustic soda, spot delivery	3.00- 3.10
China clay, domestic washed	8.00-10.00
China clay, foreign	13.00-20.00
Rosin, grade E	12.70-12.75
Satin white	2.00- 2.25
Soda ash, 50 per cent light (bags)	1.32½- ....
Starch, papermakers', in bags	3.42- ....
Talc (ton)	16.00-18.00

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 23089—Machinery for making cardboard boxes, in all sizes and shapes. Guayaquil, Ecuador. Purchase desired.

No. 23016—Newsprint paper, stationery, and wrapping paper. San Salvador, Salvador. Purchase and agency desired.

No. 23090—Wall board. Copenhagen, Denmark. Agency desired.

No. 23187—Cellulose wadding, very white. Nice, France. Purchase desired.

No. 23124—Newspapers, overissued. Shanghai, China. Agency desired.

No. 23186—Wrapping paper. Alexandria, Egypt. Agency desired.

No. 23225—Print paper. Porto Alegre, Brazil. Agency desired.

No. 23317—Wall paper. Wellington, New Zealand. Purchase desired.

No. 23355—Machinery for manufacture of paper bags, corrugated board, tags, tickets, counter-check books, and especially machines for making from the reel self-opener bags. Amsterdam, Netherlands. Purchase desired.

No. 23360—Paper tape gumming machines. Vancouver, Canada. Purchase desired.

No. 23085—Rosin. Hamburg, Germany. Purchase and agency desired.

No. 23119—Rosin. Amsterdam, Neth. Purchase desired.

Announcement is made by The Kalbfleisch Corporation, New York, of the appointment of Joseph D. Lowery as assistant sales manager of the heavy chemicals division of that company. Mr. Lowery assumed the duties of this position on the first of January.

Recent new German works on pulp manufacture issued under the general editorship of Prof. Dr. Ing. E. Heuser include Dickmann's *Die Fabrikation des Zellstoffes aus Holz Sulfitszellstoff*, and Haegglund's *Die Fabrikation des Zellstoffes aus Holz Natronzellstoff*. The first named is a book of 368 pages fully illustrated, price 25 marks. Haegglund's treatise on soda pulp is a book of 360 pages, copiously illustrated, the price of which is 30 marks. The publisher of both books is Otto Elsner Verlagsgesellschaft m. b. H., Berlin S42, Germany.

The B QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

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SELLING AGENTS
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Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
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ESTABLISHED OVER 80 YEARS

33 WEST 42nd STREET
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Sole Selling Agents for

OBBOLA KRAFT PULP

EXPORTS

There was a slight decrease in the value of paper and paper products exported from the United States during October when compared with the preceding month, but a small increase when compared with October, 1925, according to statistics compiled by the United States Department of Commerce. Exports for October last were valued at a total of $2,204,717.

Reductions in comparison with September occurred in shipments of box board, which dropped from 4,762,000 pounds to 4,011,000 pounds, and of writing papers, which showed a decrease from 977,000 pounds to 614,000 pounds. Shipments of newsprint, hanging paper, greaseproof paper, tissue and crepe paper, towels and napkins, paper bags, bristol board and vulcanized fibre were likewise smaller in October than during September. Losses in these lines, however, were nearly offset by the heavy increase in exports of wrapping papers and other classes of board. Exports of the former item, amounting to 3,550,000 pounds, not only exceeded the preceding month's shipments, but also those of any other month during the past four years. Exports of paper and straw boards, exclusive of bristols and box boards, and also of wall board and building paper were also heavier than during September and exceeded the October, 1925, shipments by 35 to 50 per cent. Other notable increases in comparison with exports during the corresponding month of 1925 were registered in writing papers, box boards, boxes and cartons, and book papers.

Exports of paper and paper products in the first nine months of 1926 reached a total value of $20,181,861, contrasted with $17,444,768 during the corresponding time in the preceding year, and while this represents an increase of six per cent, the gain in volume of shipments would appear to be even greater since the average value of most classes was considerably lower than in 1925.

IMPORTS

Wood Pulp

The market for imported wood pulp is comparatively quiet at present but there is a firm tone apparent, especially as concerns pulp for forward shipment from abroad. In certain instances during the last several weeks, importers and other sellers have offered spot lots of pulp in the United States at slight recessions from the generally recognized market levels but this merely reflected the anxiety of holders to liquidate prior to taking their year-end inventories and the concessions allowed were at best of narrow dimensions. Prices from abroad are maintained firmly, and the conditions obtaining in primary centers would indicate that a steady to firm market likely will prevail over the winter, if not longer.

Reports state that the statistical position of wood pulp in Sweden is exceptionally strong. Latest available figures show that pulp manufacturers in this Scandinavian country had disposed of more than 50 per cent of their entire 1927 production of strong sulphite and kraft pulp prior to the holiday period, sales to the United States and England having been quite heavy for this early in the season. Moreover, demand from other consuming countries for Swedish pulps has been unusually good recently, with the result mills in Sweden are in the enviable position of having over half their forward output under contract and a ready outlet for all the rest of the pulp they care to sell. Under such circumstances it is no wonder they are holding firm for the prices asked and in a great majority of cases will not budge an inch from the quotations named. In Norway, it is said marketing conditions are not so favorable as in Sweden. The krone has risen fairly sharply so that Norwegian manufacturers are receiving less dollars for their pulp while having purchased their pulp wood on a lower krone basis. It is stated, in fact, that producers in Norway are losing money on every ton of pulp disposed of at prevailing market prices. The winter has been severe thus far in Northern Europe, and already pulp shipments from some points on the East coast of Sweden have ceased; also, there is a scarcity of ship tonnage for transatlantic routes, and this has curtailed exports from Scandinavia to some extent.

Imports of pulp into the United States in October showed an appreciable increase over the preceding month, according to U. S. Department of Commerce statistics. During October a total of 109,208 long tons of chemical pulp of all kinds were imported into this country, valued at $7,082,997, compared with 93,883 tons of a value of $6,059,453 in September last, and 104,851 tons of a value of $6,459,893 in October, 1925. October receipts brought the total importations during the first ten months of 1926 up to 1,038,757 long tons, giving a monthly average of 103,875 tons, contrasted with an average of 98,936 tons monthly in the corresponding period a year ago. Imports of ground wood into the U. S. in October were 34,931 long tons, valued at $1,064,638, against 28,367 tons of a value of $959,415 in the preceding month, and 29,296 tons of a value of $852,339 in October, 1925. During the first ten months of 1926 imports of ground wood amounted to 225,943 tons, compared with 235,274 tons in the same time of 1925.

Quotations on the most popular brands of bleached sulphite range between 3.75 and 3.85 cents a pound ex dock New York though special qualities are quoted up to 4 and 4.25 cents. Strong No. 1 unbleached sulphite is selling at 2.95 to 3 cents a pound ex dock New York, and No. 2 grade at 2.80 to 2.90 cents, while easy bleaching sulphite is quoted around 3.30 cents. Prime standard Swedish kraft is steady in price at 2.90 to 3 cents ex dock. Imported ground wood is around a price basis of $38 a ton for dry and $36 for wet pulp ex dock at American Atlantic ports.

Current market quotations ex dock New York and receipts at the port of New York during December follow:

Bleached sulphite, No. 1	3.75- 4.25
Unbleached sulphite, strong No. 1	2.90- 3.15
Unbleached sulphite, No. 2	2.75- 2.90
Easy bleaching sulphite	3.25- 3.40
Mitscherlich unbleached, genuine	3.35- 3.60
Mitscherlich unbleached, ordinary	3.00- 3.15
Kraft, standard Swedish	2.90- 3.20
Ground wood, per ton (dry)	37.50-40.00

Price & Pierce, 2,700 bls. from Gothenburg; Johaneson, Wales & Sparre, 2,023 bls. from Gothenburg and 598 Copenhagen; E. M. Sergeant Co., 3,571 bls. from Gothenburg, 512 Copenhagen and 325 Oslo; Lagerloef Trading Co., 291 bls. from Hamburg and 242 Bremen; J. Andersen & Co., 6,650 bls. from Hernosand, 1,800 Stugsund, 600 Oslo and 835 Greaker; Pagel, Horton & Co., 3,000 bls. from Hernosand; Bulkley, Dunton & Co., 3,925 bls. from Stugsund, 1,850 Bremen, 800 Rotterdam and 4,750 Iggesund; Castle & Overton, 5,372 bls. from Bremen and 180 Rotterdam; Tidewater Paper Mills Co., 6,533 bls. from Chandler, Que., and 6,241 bls. ground wood from Clarke City, Que.; M. Gottesman & Co., 693 bls. from Hamburg, 4,800 Sebenico and 660 Rotterdam; National City Bank, 600 bls. from Oslo and 525 Hamburg; Perkins-Goodwin Co., 625 bls. from Oslo; Equitable Trust Co., 130 bls. from Antwerp; A. P. W. Paper Co., 1,768 tons ground wood from Sheet Harbor, N. S.; E. J. Keller Co., 1,383 bls. from Hamburg; Empire Trust Co., 3,025 bls. from Greater; Borregaard

The Pulp and Paper Trading Co.
21 East 40th Street New York City

DEALERS IN DOMESTIC CHEMICAL AND MECHANICAL PULPS AND PAPER

AGENTS FOR
J. & J. Rogers Company, Ausable Forks, N. Y.
E. B. Eddy Company, Ltd., Hull, Canada

Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

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Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
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THE HOME OF STEEL SHELL BURRS
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YELLOW JACKET SHOWERS

All Products Guaranteed to Suit You

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MITTS & MERRILL SHEET STOCK SHREDDER

Giving the Beater a Lift

The operation of a beater, with its wear and tear and tremendous power consumption, has one primary purpose, namely, hydration. Any thing that will economically bring about hydration more quickly relieves the beater just that much, cuts down on operating costs and speeds the process of paper making.

The MITTS & MERRILL SHEET & LAP STOCK SHREDDER performs on magazines, books, old paper and boxboard, frozen or dried pulp laps in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

Our Shredders are built in sizes with spouts ranging from 18" to 45" wide. We will be glad to quote you on any size adapted to your requirements.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 375 and 379 in the Paper and Pulp Mill Catalogue

MITTS & MERRILL 1013 Tilden St. **SAGINAW, MICH.**

Co., 1,116 bls. from Greaker; Scandinavian Pulp Agency, 254 bls. from Gothenburg; Fidelity Trust Co., 200 bls. from Bremen; Chemical National Bank, 300 bls. from Oslo; Buck, Kiaer & Co., 3,600 bls. from Oslo; Philadelphia Girard National Bank, 1,000 bls. from Iggesund; Order, 726 bls. from Hamburg, 1,193 Bremen, 300 Copenhagen, 600 Oslo, 11,390 ground wood Weymouth, N. S., 2,484 Wiborg and 4,371 Kotka.

Paper Stock

Comparatively limited amounts of raw material for paper-making other than wood pulp were imported into the United States in December, judging from the arrivals through the port of New York. Receipts of rags were well below those recorded a few months ago, and but small quantities of old bagging and rope were received. This doubtless reflected the rather quiet market existing in this country during the last few weeks of 1926, and also, in part, the relatively higher prices prevailing in Europe on some grades of rags and other paper stock.

Imports of all kinds of paper stock other than wood pulp through the port of New York in the month of December, 1926, these data being taken from manifests of steamers arriving at that port during the month, follow:

Old Rope

Brown Bros. & Co., 371 bls. and 208 coils; Ellerman's Wilson Line, 312 coils and 62 bls.; S. Birkenstein & Sons, 145 bls. and 240 coils; Montell & McDonough, 6 bls.; Atlantic Transport Co., 65 coils; N. E. Berzen, 135 bls.; Bulkley, Dunton & Co., 24 bls.; William Steck & Co., 3 bls. and 39 rolls; E. J. Keller Co., 109 bls.; Order, 114 bls.

Old Bagging

Castle & Overton, 278 bls.; Bulkley, Dunton & Co., 693 bls.; A. H. Searle, Inc., 29 bls.; J. Cohen, 120 bls.; Chatham Burlap Bag Corp., 150 bls.; Chase National Bank, 145 bls.; Amsinck, Sonne & Co., 115 bls.; J. M. Johnson, 86 bls.; E. Butterworth & Co., 65 bls.; National City Bank, 146 bls.; William Steck & Co., 144 bls.; Darmstadt, Scott & Courtney, 134 bls.; E. J. Keller Co., 493 bls.; Order, 459 bls.

Rags

Robert Blank, 266 bls.; Paul Berlowitz, 843 bls.; American Wool Stock Corp., 84 bls.; A. H. Searle, Inc., 302 bls.; Victor Galaup, Inc., 182 bls.; Salomon Bros. & Co., 160 bls.; American Rag Trading Co., 11 bls.; Castle & Overton, 283 bls.; Royal Mfg. Co., 127 bls.; Stone Bros. Co., 112 bls.; Atlas Waste Mfg. Co., 71 bls.; Atterbury Bros., 147 bls.; George W. Millar & Co., 40 bls.; E. Mayer, 5 bls.; Gerbruder Meyer, 37 bls.; Bulkley, Dunton & Co., 312 bls.; R. Bishop Mfg. Co., 374 bls.; Daniel M. Hicks, Inc., 190 bls.; Gatti Paper Stock Co., 200 bls.; S. Silberman Co., 377 bls.; William Steck & Co., 40 bls.; J. Cohen & Co., 74 bls.; I. Abela & Co., 54 bls.; Jaffe Products Co., 95 bls.; Musa Hartzell Co., 76 bls.; Daniel I. Murphy, Inc., 50 bls.; M. Steinberg & Son, 20 bls.; J. Cohen & Josephy, 14 bls.; J. Zorridy, 36 bls.; D. Rothenberg & Sons, 11 bls.; E. J. Keller Co., 1,528 bls.; Bank of America, 100 bls.; National Bank of Commerce, 703 bls.; American Exchange-Pacific National Bank, 41 bls.; Chase National Bank, 318 bls.; National City Bank, 737 bls.; Irving Bank and Trust Co., 327 bls.; Philadelphia Girard National Bank, 96 bls.; Fidelity Trust Co., 20 bls.; New York Trust Co., 92 bls.; Equitable Trust Co., 408 bls.; State Bank, 282 bls.; Central National Bank, 46 bls.; Bank of New York & Trust Co., 98 bls.; American Express Co., 82 bls.; Brown Bros. & Co., 180 bls.; The Barrett Co., 94 bls.; C. R. Spence & Co., 156 bls.; W. Schall & Co., 52 bls.; Lloyd Royal Belge, 8 bls.; U. S. Forwarding Co., 8 bls.; Goldman, Sachs & Co., 282 bls.; A. W. Fenton, Inc., 268 bls.; American Overocean Corp., 177 bls.; R. F. Downing & Co., 68 bls.; Gallagher & Ascher, 74 bls.; Kidder-Peabody Acceptance Corp., 100 bls.; German-Russian Transportation & Storage Corp., 953 bls.; G. P. Lotterhand, 56 bls.; Bankers Trust Co., 111 bls.; Order, 2,307 bls.

Miscellaneous Paper Stock

George M. Graves Co., 122 bls.; Bank of New York & Trust Co., 31 bls.; Atlantic Transport Co., 123 bls.; Maurice O'Meara Co., 64 bls.; Salomon Bros. & Co., 183 bls.; Bulkley, Dunton & Co., 242 bls.; Milton Snedeker Corp., 107 bls.; American &

The survival of the fittest

The easiest way to survive competition is to reduce the cost of production.

Our equipment will help you to do this:

Jenssen Acid Towers
Jenssen Spray Coolers
Bullard Gas Washer
Decker Cooking Process
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The Union Sulphur Co.

Main Offices:
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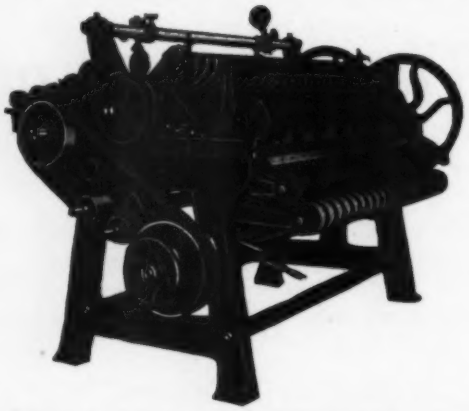
NEW YORK CITY

SULPHUR

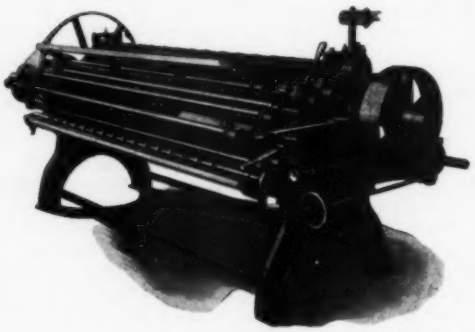


PAPER CUTTERS

Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.



Our Triple Shaft Toilet and Towel Winding Machine has long been standard equipment for paper converters. Late improvements and refinements have increased its efficiency and made possible additional reductions in production costs. Machine is ball bearing throughout. We have other machines of this type for special requirements. Name your needs. We will build the machine.

Manufactured by

Hudson-Sharp Machine Co.
Green Bay, Wisconsin
Chicago Office: 574 Wrigley Building

Sulphur

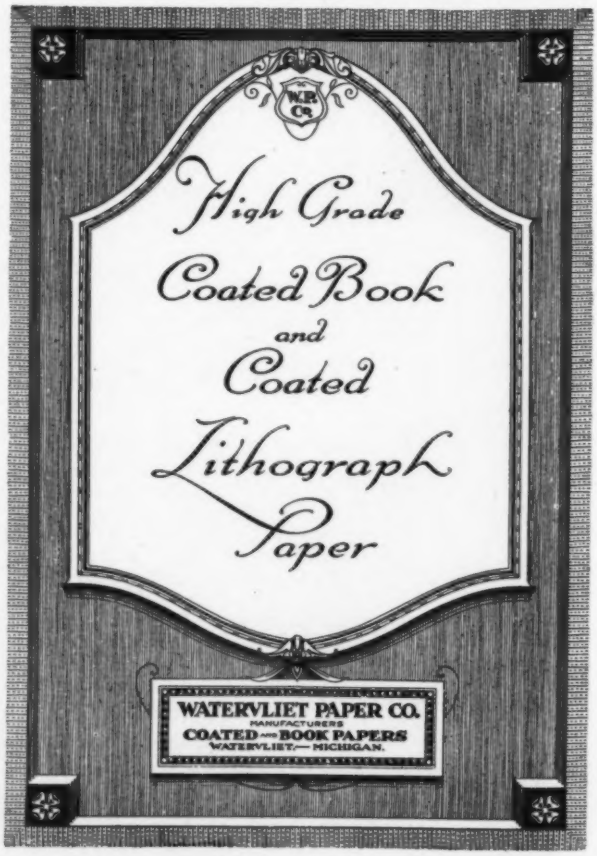
A FIRST REQUISITE

IN

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

TEXAS GULF SULPHUR CO.
41 E. 42nd Street New York City
Mine Gulf, Matagorda County, Texas



Cuban Steamship Line, 320 bls.; E. Mayer, 39 bls.; I. Cohen & Sons Co., 159 bls.; C. R. Spence & Co., 9 bls.; E. J. Keller Co., 715 bls.; Order, 360 bls.

Paper

Imports of paper into the United States in December recorded a considerable gain over the several previous months, judging from the receipts at the port of New York. Official statistics for the month are as yet unavailable but data taken from manifests of steamers reaching New York show exceptionally large amounts of newsprint and wrapping paper were imported, while good-sized quantities of cigarette, hanging, filter and other grades were received. There also were some sizeable lots of paper board imported, principally from Holland. Imports of paper of all kinds through the port of New York last month, these data being taken from manifests of steamers reaching that port, follow:

Printing

New York American, 1,512 reels from Gothenburg; C. Steiner, 7 bls. from Gothenburg and 69 cs. Rotterdam; B. F. Drakenfeld & Co., 107 cs. from Liverpool; Perkins-Goodwin Co., 262 cs. and 178 reels from Hamburg and 175 cs. Rotterdam; W. Hartmann & Co., 582 bls. from Hamburg; F. Henjes, Jr., 101 reels from Hamburg; Maurice O'Meara Co., 233 cs. from Hamburg; E. Dietzgen & Co., 17 cs. from Hamburg and 28 cs. Rotterdam; Perry, Ryer & Co., 403 cs. from Glasgow; Sinclair & Valentine Co., 4 cs. from Bremen; P. C. Zuhlke, 150 cs. from Antwerp and 3 cs. Rotterdam; Gallagher & Ascher, 8 cs. from Rotterdam; McCall Co., 2,182 rolls from Botwood, N. F.; New York Sun, 5,183 rolls from Botwood; Tidewater Paper Mills Co., 5,982 rolls from Botwood; Commercial Newspaper Co., 1,267 rolls from Botwood; New York Evening Graphic, 100 rolls from Botwood; New York Times, 97 rolls from Botwood; Jacksonville Times-Union, 67 rolls from Botwood; Oxford University Press, 15 cs. from Liverpool; F. C. Strype, 23 cs. from Rotterdam; Irving Bank and Trust Co., 172 bls. from Hamburg; C. B. Richard & Co., 66 bls. from Hamburg; Express Publishing Co. of Texas, 192 rolls from Botwood; Parsons & Whittemore, 1,078 reels from Bremen and 216 reels Hamburg; Box Board & Lining Co., 212 reels from Hamburg; G. Henschel & Co., 4 cs. from Hamburg; Order, 1,383 reels from Bremen, 215 reels Hamburg, and 3,085 rolls from Corner Brook, N. F.

Wrapping

Arkell Safety Bag Co., 669 reels from Gothenburg; Okonite Callender Cable Co., 237 reels from London; Borregaard Co., 494 bls. and 2,250 rolls from Gothenburg; Wilkinson Bros. & Co., 117 cs. from Gothenburg and 14 bls. Hamburg; L. Bamberger & Co., 80 bls. and 320 reels from Gothenburg; Gilbert Paper Co., 134 bls. and 35 rolls from Gothenburg; Birn & Wachenheim, 10 cs. from Rotterdam; Bendix Paper Co., 20 cs. from Hamburg; Commonwealth Bank, 45 cs. from Hamburg; Blauvelt-Wiley Paper Mfg. Co., 83 bls. from Glasgow; C. K. MacAlpine & Co., 155 bls. and 262 rolls from Gothenburg and 60 reels Hamburg; Thomas Barrett & Son, 21 bls. from Gothenburg; C. Steiner, 20 bls. from Hamburg and 5 bls. Oslo; National City Bank, 50 bls. from Genoa; J. P. Heffernan Paper Co., 49 bls. from Gothenburg; Maurice O'Meara Co., 48 bls. from Gothenburg; M. M. Cohen, 98 bls. and 12 reels from Gothenburg; C. G. Winans & Co., 695 reels and 15 bls. from Gothenburg; National Consumers Paper Corp., 7 cs. from Rotterdam and 27 cs. Hamburg; United Hardware & Tool Corp., 3 cs. from Hamburg and 53 bls. Bremen; Robert Wilson Paper Corp., 46 cs. from Glasgow; Insight Paper Co., 249 reels from Oslo; F. C. Strype, 45 pkgs. from Antwerp; Order, 3 bls. from Gothenburg.

Drawing

Favor, Ruhl & Co., 5 cs. from London; H. Reeve Angel & Co., 6 cs. from London; Keuffel & Esser Co., 68 rolls and 37 cs. from Hamburg, 3 cs. London and 11 cs. Rotterdam.

Cigarette

British-American Tobacco Co., 5 cs. from Liverpool; Standard Products Corp., 499 cs. from Havre; R. J. Reynolds Tobacco Co., 300 cs. from Havre and 1,480 cs. St. Nazaire; De-Manduit Paper Corp., 612 cs. from St. Nazaire; American

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Cut down *excessive* wrapping paper investment. Why carry two wrapping paper lines for one wrapping paper *purpose?*

MOSINEE

presents a perfect wrapping paper, weight and strength for each wrapping purpose. Made in all weights from 15 pounds to 100 pounds basis. The one complete, standardized and economical line of wrapping paper sold.

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"The Wrapper that Delivers the Goods"

THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

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DRAPER BROTHERS COMPANY

CANTON, MASS.

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Longcrimp Fourdrinier Wires

USED EXTENSIVELY ON

Kraft, Wrapping and Newsprint Machines

Give Longer Average Service than the Regular Weave

Made By

The Lindsay Wire Weaving Company

(Collinwood Station) CLEVELAND, OHIO

See page 363 in the 1926 Paper and Pulp Mill Catalogue

Tobacco Co., 1,300 cs. from Bordeaux; Surbrug Co., 15 cs. from Havre; Bank of the Manhattan Co., 30 cs. from Lisbon; J. V. Lago, 4 cs. from Alicante.

Filter

Bernard, Judae & Co., 2 cs. from Gothenburg; C. Sleicher & Scholl, 17 cs. from Hamburg; J. Manheimer, 145 bls. from Southampton; H. Reeve Angel & Co., 22 cs. from London and 29 bls. Southampton; Hagerty Bros., 9 cs. from Bordeaux; E. Fougera & Co., 146 cs. from Southampton; A. Giese & Son, 3 cs. from Hamburg; Order, 27 cs. from Southampton.

Writing

Coenca-Morrison Co., 7 cs. Havre; A. Lorsch & Co., 7 cs. from Havre; Guibont Freres & Co., 43 cs. from Havre; F. L. Kraemer & Co., 4 cs. from London; Sternberg & Co., 80 cs. from Marseilles.

Tissue

J. B. Mast, 3 cs. from Genoa; Schenkers, Inc., 88 cs. from Hamburg and 3 cs. Bremen; F. C. Strype, 46 cs. from Liverpool; G. W. Shelson & Co., 12 cs. from Liverpool; Iwai & Co., 4 cs. from Kobe; Baldwin Universal Co., 8 cs. from Liverpool; Reiser Co., 9 cs. from Kobe.

Hanging

A. C. Dodman Jr., Inc., 71 bls. from Liverpool, and 70 cs. Southampton; F. J. Emmerich & Co., 69 bls. from Liverpool, 62 bls. Hamburg, 59 bls. London and 5 cs. Havre; C. A. Haynes & Co., 240 bls. from London and 36 bls. Liverpool; R. F. Downing & Co., 79 bls. from London; G. J. Hunken & Co., 13 bls. and 36 cs. from Hamburg; J. E. Bernard & Co., 82 pkgs. from Antwerp; Meadows, Wye & Co., 259 bls. from Hamburg; Erie Railroad Co., 14 cs. from Hamburg; Baldwin Universal Co., 3 bls. from London.

Photo

J. J. Gavin & Co., 10 cs. from Liverpool; Amervoll Co., 12 cs. from Bremen; Globe Shipping Co., 159 cs. from Bremen; Gevaert Co. of America, 265 cs. from Antwerp and 39 cs. Rotterdam; P. C. Zuhlke, 28 cs. from Antwerp; P. Puttmann, 25 cs. from Antwerp; Order, 194 cs. from Antwerp.

Board

International Forwarding Co., 7 bls. from Gothenburg; O. M. Baxter, Inc., 25 cs. from Gothenburg; Fibre Case & Novelty Co., 82 bls. from Gothenburg; Coty, Inc., 147 cs. from Havre; Haas Bros., 232 reels from Rotterdam; First National Bank of Brooklyn, 102 reels from Rotterdam; Perkins-Goodwin Co., 1,195 rolls from Rotterdam; Half Moon Mfg. & Trading Co., 16 reels from Rotterdam; Adrian Vuyck, 2,065 reels from Rotterdam; R. F. Downing & Co., 6 cs. from Bremen; J. P. Heffernan Paper Co., 458 bls. from Rotterdam; Happel & McAvoy, 3 cs. from Havre; H. H. Ayer Co., 3 cs. from Havre; F. Premier Co., 57 cs. from Hamburg; Fidelity Trust Co., 22 cs. from Gothenburg; Standard Trunk Mfg. Co., 9 bls. from Gothenburg; Fibre Products Mfg. Co., 5 bls. from Gothenburg; Lowy & Lowy, 11 bls. from Gothenburg; American Lead Pencil Co., 4 cs. from London; Seeley Tube & Box Co., 185 reels from Rotterdam; Order, 483 reels from Rotterdam.

Miscellaneous

H. Reeve Angel & Co., 32 cs. from London and 4 cs. Gothenburg; International Forwarding Co., 48 cs. from Hamburg and 4 cs. Rotterdam; D. C. Andrews & Co., 148 cs. from Hamburg; Pennsylvania Railroad Co., 72 cs. from Hamburg; Hensel, Bruckman & Lorbacher, 18 cs. from Bremen and 6 cs. Rotterdam; Weiss Forwarding Co., 8 cs. from Bremen; Whiting-Patterson Co., 21 cs. from Southampton and 13 cs. Hamburg; Borden & Riley Paper Co., 3 cs. from Antwerp; Vernon Bros. & Co., 43 bls. from Glasgow; Heemsoth, Basse & Co., 14 pkgs. from Rotterdam; P. H. Petry & Co., 5 cs. from Rotterdam; Tamm & Co., 4 cs. from Rotterdam; Zellerbach Paper Co., 23 cs. from Rotterdam; S. Gilbert, 69 cs. from Rotterdam; Public National Bank, 8 cs. from Marseilles; H. DeMagnin Co., 26 cs. from Havre; Japan Paper Co., 36 cs. from Havre; and 8 cs. London; F. C. Strype, 50 cs. from Hamburg; Globe Shipping Co., 14 cs. from Bremen and 8 cs. Rotterdam; Quality Art Novelty Co., 9 cs. from Hamburg; Elwin Walker, 39 bls. from Hamburg; G. W. Sheldon & Co., 7 cs. from London;

DAYTON
High Speed
Beaters

Well onto fifty mills are now using one or many Dayton High Speed Beaters. Many of these mills have ordered additional "Dayton" equipment after watching the successful performance of initial installations. Data compiled discloses:

Heavier Furnishes
Faster Beating
Greater Output
More Uniform Product
Saving in Power
Saving in Labor

We invite you to investigate the Dayton High Speed Beater because their installation in your mill would unquestionably prove advantageous to you.

Eastern Representatives
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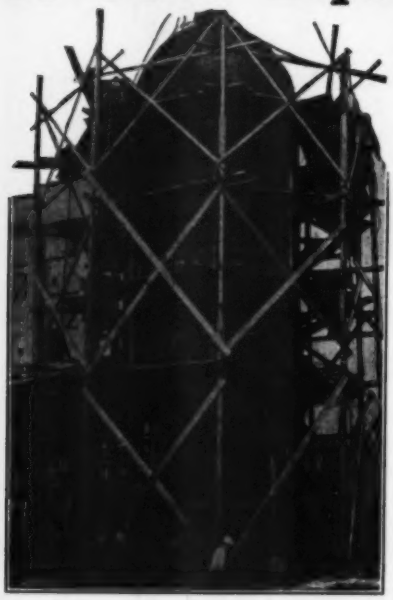
501 Fifth Ave., New York, N. Y.
THE DAYTON BEATER & HOIST CO.
Dayton, Ohio

Is Your Equipment Getting "Feeble"?



START the year off right—check over your equipment to see that it is still "active" and that it will go through the year giving you steady, uninterrupted performance. If there is one "feeble" unit in your mill, now is the time to replace it. Plan for a bigger production in '27 and you'll get it, if your mill is Manitowoc equipped.

Because Manitowoc Digesters, Incinerators, Diffusers, Lime Recovery Kilns, Disc Evaporators, Barking Drums, Refiners, etc., are built up to a high standard, they perform economically and increase mill efficiency. And because they are designed and constructed to meet the exacting conditions of your mill, they assure you low operating costs.

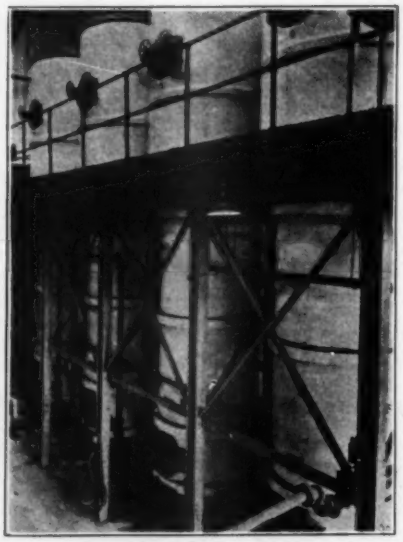
Let our engineers design time-saving equipment for your mill. Write for special bulletin covering paper mill equipment.

Manitowoc Engineering Works
Manitowoc, Wisconsin

MANITOWOC

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
NORTHWEST
PAPER CO.
Cloquet, Minn.



NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1926 Paper and Pulp Mill Catalogue

Coenca-Morrison Co., 5 cs. from Havre; John Wanamaker, 3 cs. from Havre; Kadri Bros., 26 cs. from Havre; J. E. Bernard & Co., 3 cs. from Gothenburg; Morrison & Co., 4 cs. from Valparaiso; E. Walker, 10 cs. from Hamburg; Bendix Paper Co., 22 cs. from Hamburg; C. A. Johnson & Co., 16 bls. from Liverpool; International Acceptance Bank, 54 cs. from Rotterdam; R. F. Downing & Co., 6 cs. from Havre; Causon & Montgolfer, 60 cs. from Havre; Ault & Wiborg Co., 12 cs. from Canton; Haule Wax Paper Mfg. Co., 4 cs. from Hamburg; F. L. Kraemer & Co., 4 cs. from London.

Duty on Importations of Foreign Paper

The Customs Court of Appeals in Washington has again handed down an important decision affecting the importation of foreign papers, the decision involving the practice of importers in deducting German inland freight from the dutiable value of paper. Some months ago the same court decided that inland freight was not properly deductible, that decision particularly involving wrapping paper, but in general applicable to all German papers. The Customs Court at New York in another case allowed such a deduction on an importation of kraft wrapping paper. Again the Customs Court of Appeals has decided that this was not a properly deductible item. In the later case about thirty importations were involved, including indirectly sulphite wrapping, rotogravure and book paper.

The matter of deduction of inland freight was one of the early problems taken up after the Import Committee of the American Paper Industry was formed, as it was felt that this was a form of evasion of the Tariff Act which was working particular difficulty to the American mills.

The Treasury Department has given a decision on the classification for duty of paper bags with a surface design, such as are used for coffee, candy, etc. The Boston appraiser believed these to be dutiable at 5 cents per pound and 20 per cent as bags made of paper with a surface design, while the New York appraiser considered the bags to be dutiable at 35 per cent as manufactures of paper. The Treasury Department held the higher rate as applied at Boston to be correct.

Another recent decision of the Customs Court is that foreign envelope linings have been undervalued. Several similar decisions have been rendered of various importations, the undervaluation ranging from 10 to 20 per cent. In the latest case the undervaluation was in the lower figure.

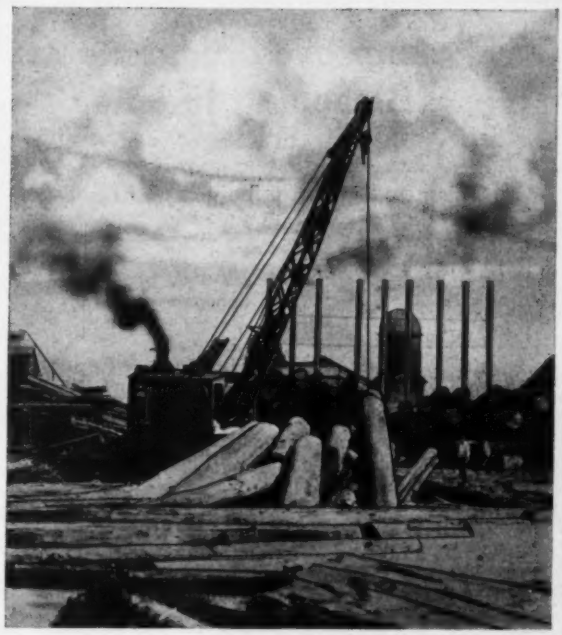
Pulp board for wall board from Canada held to be subject to Canadian 5 per cent sales tax in addition to invoice value as part of the dutiable value. This is the first of many cases involving the same question to be decided, trial of others having been deferred pending decision in this test case.

A E S C Elects Officers

At the annual meeting of the American Engineering Standards Committee, held in New York City on December 9, Mr. Charles E. Skinner, a representative of the American Institute of Electrical Engineers, was reelected chairman for the year 1927, and Mr. Charles Rufus Harte, representative of the American Electric Railway Association, was reelected vice-chairman.

Notable developments in the industrial standardization movement, including important progress in the mechanical and mining industries, in industrial safety, its further extension through managerial and trade association activities, and forward steps in international co-operation, have been achieved in 1926.

George P. Berkey, former vice-president and manager of the Consolidated Water Power and Paper Co., Wisconsin Rapids, Wis., has been named vice-president of the Crown-Willamette Paper Co., San Francisco, Cal. Mr. Berkey had been with the Consolidated company for eighteen years and resigned a few weeks ago at the time of I. P. Witter's withdrawal from the company. He will be located first at Portland, Ore., and later will be transferred to San Francisco.



Lower Price Cannot Off-Set Superior Design, Greater Speed, Lower Maintenance, Longer Life and Higher All-Around Efficiency

THAT is why one crane user, after buying an "AMERICAN" Locomotive Crane, offered to trade in TWO cranes of another make for ONE "AMERICAN" of the same rated size. He even thought he might be willing to throw in some cash to boot.

Once we sold a 7x10 "AMERICAN" Locomotive Crane to a concern which had been using an 8x10 crane of a competing make. They wanted to pull a 50-ton car full of coal up a 2 per cent grade. Because the other crane couldn't do this they thought we should quote on a crane having more horsepower. We agreed to guarantee that our 7x10 crane would take the car up the grade. They bought the "AMERICAN" and it more than met the guarantee. One day the crane came down that long 2 per cent grade with seven cars—three of them loaded with coal—and the operator had the load under complete control at all times.

Write for a copy of the "AMERICAN" Locomotive Crane Catalog which tells about the many points of outstanding superiority possessed by "AMERICAN" Locomotive Cranes.

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis, New Orleans.

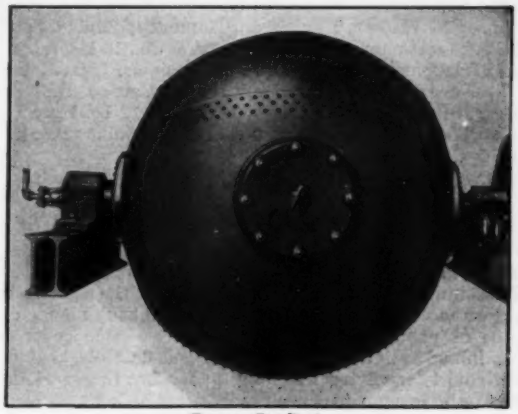
The Improved Biggs Rotary Bleaching Engine

DESIGNED to succeed where others have failed.

This new Biggs Engine will positively handle all consistencies cold under pressure and turn out uniform results with a minimum of chlorine bleach.

This performance is unique in the industry when the low horsepower required is considered. Batches of the highest commonly used densities can be cold bleached economically in this new engine.

Over thirty years' service to paper mills has given the Biggs Boiler Works Company the practical experience necessary to manufacture and introduce the kind of Globe and Cylinder Rotaries, Digesters, etc., the trade needs and wants. Let us quote on your requirements and give you information on the complete Biggs Rotary Line.



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300 Madison Ave., New York City

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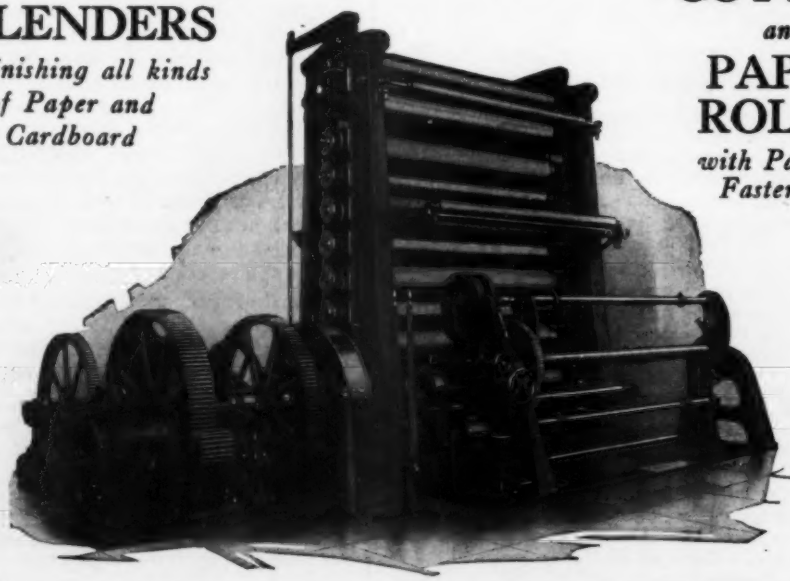
GLOBE and CYLINDER
ROTARY BLEACHING BOILERS
for Years of Dependable Cooking and Bleaching

Holyoke Machine Co., Holyoke, Mass.

Makers of Improved Machinery for Wood Pulp and Paper Mills

LARGEST MAKERS *of*
CALENDERS
for finishing all kinds of Paper and Cardboard

COTTON *and* PAPER ROLLS
with Patented Fastenings



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